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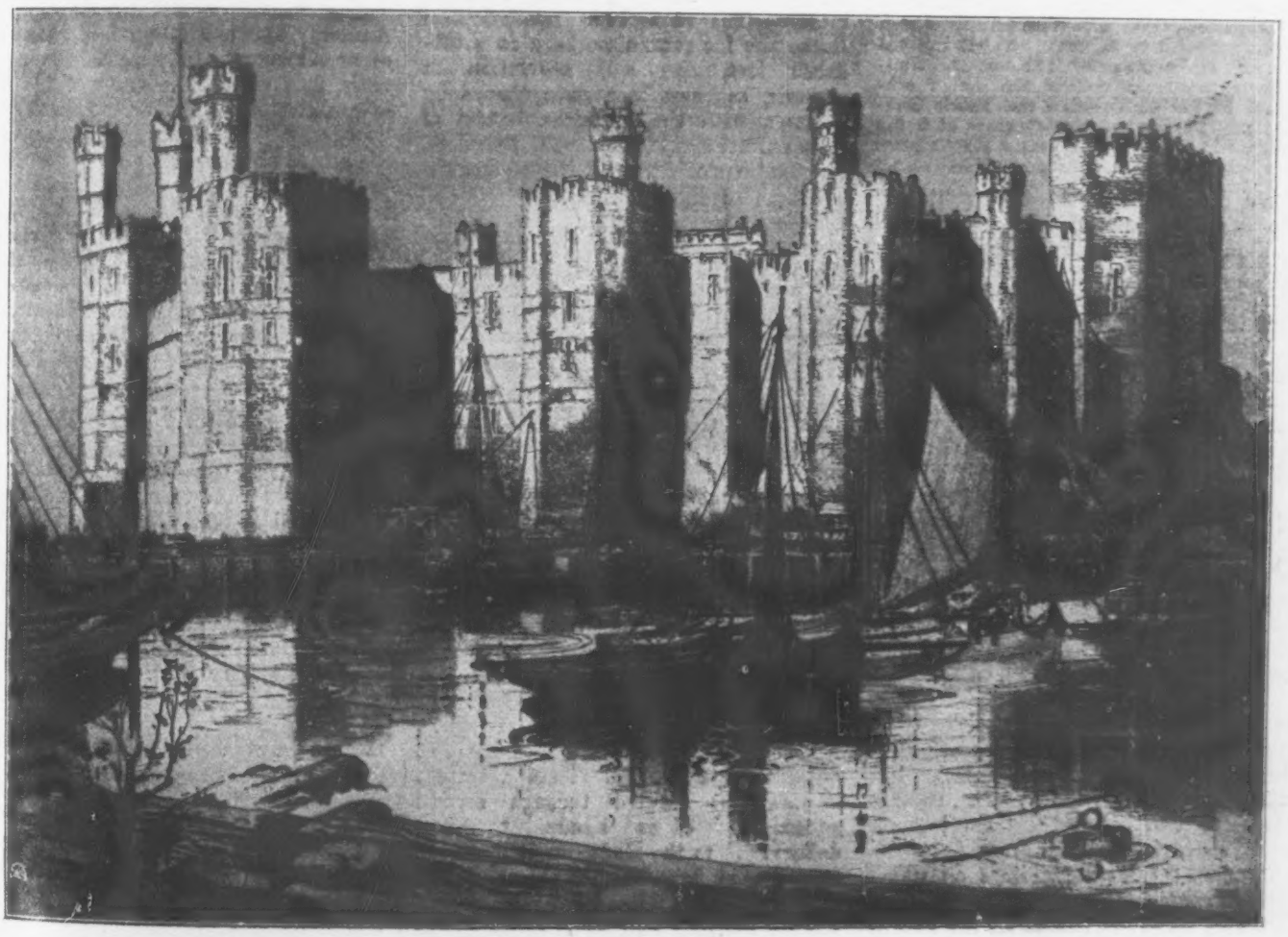

Carnarvon Castle. (*See page* 33.)

Reduced from an Etching by Mr. W. Monk, R.E. (Published by the Artist at Amersham.)

AN INTERESTING EXPERIMENT.

THROUGH the courtesy of an American correspondent we have received a comprehensive report of the developments that have followed the recent opening of the first instalment of the Protestant Episcopal Cathedral on the Morningside Heights, New York. This building, as our readers may be aware, was designed some twenty years ago by the late George L. Heins and his partner, Mr. C. G. La Farge, and the choir has recently been completed under the supervision of the last named. It appears that without any warning the Trustees terminated Mr. La Farge's appointment and called in Mr. Ralph Adams Cram as their adviser. While our sympathy must be extended to an architect who will naturally be grievously disappointed in having to turn over his half-completed work to others, we are bound to admit that the Trustees appear to be acting within their legal rights.

Mr. Cram's action in at once communicating with Mr. La Farge, and in agreeing to accept the appointment only if the American Institute of Architects ruled that in doing so he was not violating the ethics of the profession, is exactly what we should expect of him, knowing his keen sense of what is due from one architect to another.

This change, though likely to have an important influence on a building dominating the northern end of Manhattan Island, is not, in our view, the most interesting feature in the Trustees' action; it appears to be in reality subordinate to a scheme which, if put into

general practice, would revolutionise our architectural methods in regard to large and important buildings.

Read carefully the following statement by Dean Grosvenor, the Chairman of the Fabric Committee—

"This new cathedral is to be the biggest and finest ecclesiastical structure in modern times, with the single exception of the new cathedral of Liverpool. It is too big for one man. It is to be no one-man affair. It is to be such a structure as should have the fruits of the best minds in the world and the opinions of the greatest experts on ecclesiastical architecture in the world. It is to be made as fine and as beautiful as it is possible for such a structure to be made.

The determination reached by the Trustees to bring this to pass will result in the enlargement of the original plans for the cathedral. The Trustees have greatly broadened their views about it, and in this situation they have decided to appoint Mr. Ralph Adams Cram to be their consulting architect.

He is to act in this manner: For the coming additions to the building Mr. Cram will select the architect for the specific work with the approval of the Fabric Committee and the whole body of Trustees. There are to be no competitions. You may say for me that I do not approve of competitions. When the architect selected shall have finished his design he will submit it to Mr. Cram, who will reject it at once and direct another if he sees fit. However, if he thinks well of the design submitted he will lay it before the Fabric Committee. If this committee approves of it the design will then be laid before the Trustees in a body, and there final action will be taken."

We do not think we are overstating the case in describing the suggested method as revolutionary in its character; though, however great the departure from recognised practice in the present day, the genesis of the idea underlying it may be easily traced. A study of most of our old buildings reveals the fact that much of their charm is due to their being the work of many hands, and it is doubtless with a view to recapturing that form of interest that this attempt is being made to introduce the work of a number of men into a single building. That the experiment is an interesting one must be admitted, but whether the results will justify it is more doubtful. In the hands of Mr. Cram it will have the best possible chance of success, and if it fails it can only be from some inherent weakness.

To our mind there appears to be a curiously artificial atmosphere about the proposal, which will probably result in some corresponding artificiality, but thinly disguised, in the building, so that it will obviously, to the trained mind, only simulate and not reproduce the charm of those old buildings on which successive generations have laboured. We may be wrong, indeed for the sake of New York we trust that we are, but the feeling remains that the spirit of our time is too remote from that of the Middle Ages for any attempt at imitation of mediæval methods to achieve its end, and that, while our architects are in the habit of working on the lines of the later Renaissance, the mere fact that some have trained themselves to express their imaginings in the Gothic manner will not enable them to recreate the more subtle characteristics of those times, least of all in such an environment as that of New York.

The danger will be that this important work may lose the homogeneity so essential to a fine building without achieving the compensating quality of varied interest that is so evidently in the mind of those controlling its destinies. However, America is the land of bold experiments, and perhaps it may be as well if one more is added to the striking record it may already claim of experiments in religion, in law, in education, in construction, and in other directions too numerous to recite. Experiment is the outcome of mental activity, and perhaps an occasional failure is not too high a price to pay for the results that attend a fearless attitude in face of all the problems of life and art.

THE AMERICAN ACADEMY IN ROME.

IN view of the schemes, still more or less in the air, for the establishment of a British Architectural School at Rome on the French model, it is not uninteresting to learn what the Americans are doing in this direction. The last quarterly Bulletin of the American Institute of Architects throws some light on the matter. The American Academy in Rome has for some time been an established fact, and this institution, it appears, has now been strengthened by a union with the American School of Classical Studies. There will, therefore, now be two schools within the Academy—a School of Fine Arts and a School of Classical Studies; and, as the Bulletin states, the Academy will represent America in Rome in all branches of artistic and classical culture. The word "culture" is still dear to the heart of your cultivated American.

The history of the American School of Architecture possesses some interest. It was, in the first instance, organised by a group of artists, sculptors, and painters who were engaged in planning the Columbian Exposition, and was inaugurated in the Villa Aurora in 1895. During the first fifteen years of its existence the artists contributed over 15,000*l.* for its support, which indicates their estimate of its value in the development of American art. Beginning with an architectural department, this was soon followed by a department of sculpture and painting, and the Academy became incorporated by Congress as a national institution. Until a certain income was secured through several subscriptions of one hundred thousand dollars each to the Endowment Fund the students in the Academy were beneficiaries from various scholarship funds, but for the past four years competitions have been instituted throughout the United States in each branch of the fine arts, and the successful competitors have been sent to the Academy for three years with an annual subvention of one thousand dollars. Down to the present time sixty-four students have pursued their advanced studies at the Academy, many of whom have already attained high rank in their several professions. In addition to these competitive students there have been in residence at the Academy at various times the holders of the McKim Fellowship and many scholarships in the possession of Harvard and other Universities and schools. There are at present nine Academy Fellows in residence and two holding other scholarships.

The national interest in the school is in a measure indicated by the fact that among its most liberal supporters have been Mr. Pierpont Morgan and other wealthy patrons of the arts, while the sum of a hundred thousand dollars has been raised as a memorial to Mr. McKim. This distinguished architect manifested during his life the greatest interest in the Academy, to the establishment of which he devoted much time and effort, and, further, by the provisions of his will he bequeathed to it a sum of about two hundred thousand dollars subject to the life interest of his daughter. Notwithstanding the strong financial backing which the Academy has received from all quarters, it appears that much larger resources will be needed for new buildings and endowments to enable it to take full advantage of the opportunities which are now open to it. It may be gathered, therefore, that the foundation and adequate working of an art school of the kind is a matter of some cost.

The scope of the newly-organised Academy covers a larger field than that of architectural study alone. It recognises, first of all, the unity of the arts of architecture, painting, and sculpture. The failure of the American educational system to co-ordinate these arts is admitted. It is hoped that the present foundation, placed in a centre where such unity finds its highest expression, will not be without effect on the artistic outlook of its Fellows and students—an effect which later will be manifested no doubt in the general levelling up of the art production of the United States.

NOTES.

St. Paul's Bridge.

WE very much regret to see that the City Corporation has succeeded in obtaining the approval of the Select Committee in its attempt to again rush its scheme through without sufficient time or opportunity being allowed for its adequate consideration from every point of view involved. We should have thought that the onus would lie on the promoters to prove first of all the soundness of the object they have in view, and then afterwards to prove the correctness of the method whereby they propose to carry it out. We have so far seen no attempt to prove that this is the right place for a through traffic route. This seems to have been taken for granted, and upon this assumption the whole of the promoters' case is built. Yet this is precisely the point which is open to grave doubt, and from a town-planning point of view the assumption appears unwarranted. The Select Committee does not appear to have called for traffic maps or traffic statistics, or anything in the nature of evidence to prove that a through traffic route must be situated at this precise spot. They seem to have taken it all for granted, and the Corporation was allowed to throw the onus of proof on their opposers, and to confine themselves to attacking any tentative suggestions that might have been put forward, and to showing how dangerous a tramway tunnel would be if put where it would not be necessary to put it, and where, so far as we know no

one proposed to put it. In our last Review of Civic Design we pointed out some of the objections to this position as a through traffic route and the obvious advantages of Blackfriars as a main north and south artery, but such points as those we raised do not appear to have been thought worth consideration.

St. Paul's: The Evidence. If we may judge from the evidence as reported, the three architects who appeared before the Select Committee seem to have been consulted only on the method whereby the object of the Bill is to be carried out, and not as to whether this object is in itself a reasonable one and the best town-planning solution imaginable of the traffic difficulties which gave rise to the scheme. Granted the necessity of a through traffic route at this exact spot, and granted that this is the one important factor that should dominate the scheme, there is a good deal, no doubt, to be said for the way in which the Corporation propose to carry it out, and it is quite proper that the Corporation should ask these architects to point out its advantages to the Committee. We now know all there is to be said in favour of this scheme, and we must confess we are not greatly impressed. But, as we said before, it is just this necessity for a traffic route at this spot which should not be taken for granted, as no proof is forthcoming. Neither have we any proof that the three architects are agreed that this is the best possible scheme imaginable. On the contrary, Mr. Collcutt is reported to have expressed the opinion that if it were possible to construct an axial bridge and approach to St. Paul's he would consider that the best scheme that could be put forward. We have seen no proof that such a scheme is impossible, neither have we heard that the Corporation has requested Mr. Collcutt or anyone else to endeavour to work it out. The whole matter is summed up in a question reported to have been put to Mr. Collcutt. "In short, you think it easy to find out a better scheme than that which is put before us to-day?" The whole case for the opposition is contained in Mr. Collcutt's reply, "I do." Until the Corporation, by competition or otherwise, make an honest endeavour to discover that scheme, they cannot be said to be acting up to their expressed intention of doing the best they can for London, and we can only hope that Parliament will again take a different view to that of the Select Committee.

As Others See Us. The new English stamps are described by the London correspondent of the *Corrieré della Sera* as "simply the most vulgar and most depressing of all existing issues. The predominant note is economy, though against economy *per se* there is little to be said, but in this case the King's head lacks character, and might equally be that of the Tsar of Russia or any other gentleman with a beard. Nor is this the only failure in the design of these ugly English stamps, bearing only the inscriptions halfpenny, one penny. Who could possess a soul so void of the spirit of art and poetry as to put in circulation in the vastest Empire in the world, from the very heart around which half the human race revolves, a design conceived on a purely monetary idea?" It is well to see oneself occasionally through other eyes; we were prepared to criticise our new stamps from the point of view of the decorative designer, but it is of more value that we should be made to realise, in a broad and comprehensive way, what a stamp should mean as one of the methods of expressing national characteristics and aspirations.

The Teaching of Art. The Board of Education in its circular issued on June 29 expresses the intention of terminating the present method of examining for art class teachers' and art masters' certificates next year, and of substituting tests, not at present specifically defined, that would demand a more comprehensive general education and artistic attainments less stereotyped in their character; these tests to be combined with a suitable course of professional training. The intention of the Board appears to be excellent, and we shall await with interest the publication of a detailed scheme. At the same time we should hope that there will be no attempt to substitute for a high standard of technical achievement an inferior one supported by a smattering of knowledge extending over too wide a range. The arts are already, in this country, too much under the domination of the glib-tongued dilettanti, and if the latter gentlemen are to receive official recognition into the bargain we shall suffer still further from their operations. There is a real danger in this direction, and the Board of Education will do well to bear it in mind.

L.C.C. Cottages Purchase Scheme. The Housing Committee's recommendation to the London County Council that it should apply for Parliamentary powers to sell its cottages on building society methods marks a fresh development of municipal enterprise. We see no objection, on principle, to a body empowered to build and to let houses also having powers to sell on such terms as may suit it and the purchaser. There is undoubtedly an increasing tendency towards thrift in our working classes, and further opportunties for the gradual investment of savings would encourage this. Without a doubt London County Council property is well built, but whether it can be built cheaply enough to compete with the private speculator from the buyer's point of view has not yet been tested. It can be let at a reasonable rent because of the strong position of the London County Council as borrowers, but other factors have to be taken into account when it is a question of selling.

Carnarvon Castle. Carnarvon Castle, the scene of the Investiture of the Prince of Wales on Thursday, is an ancient and picturesque fortress which bears striking testimony to the permanence of the work of its XIIIth-century builders. That it is in such a remarkably good state of preservation after so many hundreds of years and after so much active service is very satisfactory: for its suitability for the recent high ceremony was unique. The historic building in which with all spectacular pomp and traditional sentiment the King presented his son to the people of Wales is a type of mediæval fortification which has distinct architectural qualities: for instance, it reveals its purpose at first sight. It was designed to be impregnable against all known engines of war, and, although gunpowder began to be used about the time the building was completed, the walls were solid enough to defy the efforts of all those who attacked in succeeding centuries. Time, more than "villainous saltpetre," as Shakespeare called it, has been the most persistent agent of destruction, and, thanks to the weight of the structure, its disintegration has been slow. The Castle still presents a formidable appearance, and, as may be realised from Mr. Monk's dignified etching (p. 31), its grim but not unlovely walls dominate scenes of activity on the Menai Strait and the River Seiont, which are not very dissimilar from those associated with the Phœnicians and the Romans. Inside, renovations have been made under the care of the Office of Works, and its appearance throughout is a tribute to the skilful blending of ancient and modern methods of construction.

THE NEW ST. PAUL'S BRIDGE.

On Tuesday a Select Committee of the House of Commons, presided over by Mr. Mooney, commenced the consideration of the Bill for constructing a new bridge across the Thames from the south side to St. Paul's and the widening of Southwark Bridge. The scheme has already passed a Select Committee of the House of Lords.

At the outset of the proceedings the Chairman said he had received a letter from Professor Beresford Pite offering to give evidence against the Corporation scheme. Under ordinary circumstances he would not have any *locus*, but he thought that the Committee would like to hear what Professor Pite had to say.

Mr. Honoratus Lloyd, K.C., on behalf of the Corporation, said he thought the most convenient arrangement would be for him to shortly state the course he intended to pursue, and then Professor Pite could go into the witness chair. In accordance with the instruction of the House the Corporation had consulted some very eminent architects in regard to the scheme—Sir W. Emerson and Mr. T. E. Collcutt, Past-Presidents of the R.I.B.A., and Mr. J. J. Burnet, F.R.I.B.A. He intended to call those gentlemen before the Committee. He had also hoped to call the Engineer to the Dean and Chapter of St. Paul's, Mr. A. J. Barry, but he had been called abroad. Mr. Barry had written the following letter to Mr. Basil Mott, the engineer to the scheme:—"In reply to your letter of the 27th inst., in which you inquire what my views would be as regards the possible damage to St. Paul's Cathedral if a tramway subway were constructed nearer to the south side of the Cathedral than shown on the plans that have been discussed between us, I beg to say at once that I should regard with the gravest concern any proposal that would involve the excavation of the subsoil nearer to the Cathedral than as shown on the plan you submitted to me, more particularly if such disturbance of subsoil took place on the south side of the Cathedral. After discussing with you the maximum depth to which the foundations of the tramway subway as proposed to be constructed under your Bill of this year should be carried, the horizontal distance of the same from the foundations of the Cathedral, and after agreeing on certain protective works to be carried out before the proposed excavations were commenced, we eventually agreed with you in certain clauses for the protection of the Cathedral. In consenting to the disturbance of ground, even in the situation as then proposed, we were not without some

misgivings, and in accepting the clauses which were finally agreed we were actuated by the desire not to interfere, if possible, with a work of great public importance. We were influenced, too, by the fact that the proposed excavations for the tramway subway would only affect that part of the Cathedral foundation which carries the least weight and is most secure. When you inquire what my views would be as to the possible damage to St. Paul's if the subway were constructed nearer to the south side of the Cathedral, I presume you have in your mind the construction of a tramway under St. Paul's Churchyard from the point about opposite to the centre of the south transept window eastwards and round the east end of the Cathedral. I have no hesitation in saying that, from an engineering point of view, I should regard the carrying out of such a proposal as certain to cause the most serious damage to the structure of the Cathedral. The main dome is, as perhaps you know, carried on four main corner piers, in addition to eight intermediate ones. The four piers on the north side have settled very little. In every case the piers carrying the south segment of the main dome have settled considerably more than any of the others. The south wall of the west transept has developed serious cracks, and there has been a general movement or draw of the whole structure towards the west and the south. This is evidenced by numerous cracks in the building and by the fact that the south wall of the building is already out of the vertical. Generally, I regard this part of the Cathedral as already being in a state of comparatively unstable equilibrium, and I should regard a far less serious disturbance of the subsoil than that which would be involved by the construction of so large a work as a tramway subway as close to the south wall of the building as, I understand, is proposed as entirely unpermissible in the interests of the security of so important a public structure as the Cathedral."

Mr. Lloyd then read the following report to the Corporation, signed by Mr. Emerson, Mr. Collcutt, and Mr. Burnet:—

"7, Grosvenor-mansions,
76, Victoria-street, S.W.,
July 7, 1911.

To Sir James Bell, Town Clerk, Guildhall.—Dear Sir,—We have now completed our inquiries and consultations, and have the honour to reply to your letter inviting our opinion and advice in respect to the instruction of the House of Commons to the Committee on the Corporation of London (Bridges) Bill "not to agree to any scheme for the construction of the proposed new bridge, including the approaches thereto, until they are satisfied that the scheme, both in respect of architectural design and convenience of traffic, is the best adapted to the public needs and best suited to the character of the site."

2. We construe the words "the scheme" in the instruction as meaning the official scheme of the Corporation or any alternative scheme for a bridge to open out at or near St. Paul's Churchyard, which is the "site" in question. We have considered the scheme and also some other suggestions. The instruction opens up the three questions of:—(*a*) The best adaptation to public needs: (*b*) appropriateness to the character of the site; and (*c*) architectural design.

3. We accept as essential conditions for a satisfactory scheme the following requirements:—(1) That the projected bridge must have its roadway at the level above high-water mark shown upon the section; (2) that the linking of the northern and southern tramway system is an integral part of any scheme; (3) that the roadway from the bridge must be carried as a bridge over Queen Victoria-street.

4. As to (*a*) adaptation to public needs, the object of the Bill is to relieve the congestion of traffic between south and north over London, Southwark, and Blackfriars bridges, from a point in Southwark, near Marchelsea-road, direct to the main traffic roads to the north *viâ* Aldersgate, and to offer facilities for connecting the tramway systems on the south with those on the north. After the most careful consideration, both separately and in frequent consultation of various suggested or possible routes, and study of the general plan of London roadways and contemplated tramways in the neighbourhood of St. Paul's, we are of opinion that the line of route proposed by the Corporation is best adapted to the public needs and to fulfilment of the objects of the Bill.

5. As to (*b*) appropriateness to the character of the site, we would point out that in the Corporation scheme the situation of St. Paul's in the relation of its line of axis to the central line of the river is not a factor. The area of the Churchyard would be increased, and there would be no consequential obstacle to the consideration of future improvements of the Churchyard. Moreover, better views of the Cathedral would be secured on the only side on which this can be done, without disturbing the picturesque charm of present surroundings. There is the further point of great practical importance that, owing to the depth of the Cathedral foundations and the quality of the subsoil, it is only on the eastern side of St. Paul's that a subway for tramways can be constructed above the level of the foundations without menace to the structure. (It is understood, of course, that the subway is not to be deeper than shown on the section.) Having carefully considered these points and all the surroundings of the site, we are of opinion that the alignment proposed by the Corporation is the one best suited to the character of the site.

6. In respect to (*c*) architectural design, we are in complete accord with the opinion of the Council of the R.I.B.A., that an architect or architects should have been appointed to collaborate with the engineers as to the general design of the bridge and its approaches when the scheme was initiated. In making this observation the Council of the Institute were undoubtedly actuated by the desire—shared, of course, by the City authorities—that a fine monumental bridge of masonry should be erected. In skilled hands the bridge and its approaches can be made a magnificent addition to the river scenery about the City.

7. Since the scheme was published side issues have been raised as to the "opening up" of St. Paul's. At first sight, and without detailed expert scrutiny, the idea that the opportunity might be taken to open up a vista terminating in the south transept of the Cathedral is attractive. The project shown by black lines on the plan has appealed to some architects and to a section of the public, and there has been a tendency to subordinate the main purpose of the new avenue of traffic between north and south to what would at the best be a subsidiary aim. In considering the project three points of great importance have to be borne in mind. They are:—(i.) The alignment of the bridge in relation to the river, since the proposed vista would only be obtainable by the building of a skew bridge; (ii.) the width of the northern approach to the Cathedral; (iii.) the possibility of future river embankments being constructed below Blackfriars.

8. We are of opinion that the suggested alignment is not good, and that, as it would be almost impossible to make a satisfactory monumental design for such a skew bridge in masonry, it is probable that the bridge would have to be of steel—a contingency which the R.I.B.A. evidently wish to prevent.* There is strong presumptive evidence that Wren did not design the side elevation of the Cathedral to be looked at from any great distance. This is shown by the bolder treatment of the west front and of the dome as compared with the comparatively superficial ornamentation of the other wall surfaces. And in this matter the great architect followed the best traditions of his profession. We know of no famous public building, either here or on the Continent, in respect to which it has been considered necessary to arrange great roads leading to the side of the structure. Wren evidently did not contemplate such approaches in the case of the Cathedral, but he did contemplate a wide road at the east end, and that he was capable of taking large views as to future requirements was shown by his well-known plan for the rebuilding of London. We may add that the Greeks—great artists—took especial care that the Parthenon should not be approached by a road leading directly up to it.

9. Further, it is to be observed that views not less interesting than the suggested "vista" will be opened up by the roadway proposed by the Corporation, and that it would not prevent improvements subsequently being made, if necessity arose, in connexion with a general scheme for improvement of the Churchyard. We wish it to be clearly understood, however, that, in our opinion, there is a limit to such "improvement," and that to exceed it would be to place Wren's design at a positive disadvantage by bringing it under conditions it was not designed to meet. But such limit would not be exceeded by the improvements the proposed Corporation route would effect, and facilities would be offered for opening up picturesque views of St. Paul's which have hitherto been obscured.

10. While it has been no part of our duty to examine with care the financial aspects of the conflicting schemes which have been the subject of public discussion, we feel it right to say that we have been impressed by the extent to which the "vista" scheme would involve altogether heavier expenditure out of all proportion to the Corporation project.

11. With respect to the suggestions we are asked to make, we agree with the Council of the R.I.B.A. in their recommendation that architects should collaborate with the engineers in the designs for the bridge, the archways over Queen Victoria-street and Thames-street, and the approaches as well as the accesses from the lower and higher levels, and in the debouchment of the roads. If the general scheme is passed by Parliament we advise that such architect or architects should be appointed.

12. We submit the following suggestions for improvement of the scheme as shown on the plan:—(1) That where the bridge road debouches on to Cannon-street it should be opened out as much as possible within the lines of deviation, and that the corner building to the south-east of Old Change be also acquired, thus opening that corner towards St. Paul's. (2) That the building frontage along Old Change should be no nearer to the east end of the Cathedral than at present, any future buildings following that line, and that the whole of the existing buildings between St. Paul's and Old Change should be removed. (3) That at some time the property now obscuring the south end of the Post Office in St. Martin's-le-Grand be acquired, and the space opened up and arranged so that a fine suitable architectural feature might centre on the line of the new bridge. If this were done it would also be possible for Foster-lane to somewhat relieve the traffic by St. Martin's-le-Grand. These alterations would give views of both the south-east and north-east sides of St. Paul's not hitherto obtainable. Further, ample space would be provided for the traffic at the road junctions, and right-angled crossings would be avoided."

Mr. Lloyd, commenting on the three suggested improvements of the scheme, said that the buildings mentioned in the second suggestions were already within the limits of deviation; whilst numbers two and three were improvements which were not within the scope of actual approach, but they were improvements which the Corporation had in contemplation and would no doubt be carried out.

Professor Pite then stated his objections to the scheme. He said that in the first place the proposed new wide thoroughfare did not combine architecturally with the great monument, St. Paul's Cathedral, which was practically the central object in the City. There was a want of definite architectural relationship between the great causeway and the Cathedral. That he should describe as an objection to the plan. There ought to be some architectural connexion between the new thoroughfare and the Cathedral. The shape of St. Paul's Churchyard was very irregular. If it was squared up all the way round, a geometrical relation might be created between the new road and the rectangular building in the centre. He urged very strongly that the direct line of the road had a necessary connexion with the building, and that had not been provided for in the scheme. Another great objection he had was to the aspect rather than to the plan. The aspect of St. Paul's was that interesting architectural "crown" which it made in every

* I am of opinion that it would be possible to construct a bridge over the river giving a vista of St. Paul's, which I should much prefer if found practicable. (Signed) T. E. COLLCUTT.

view of the City. That was an asset of very great value. His alternative suggestion was a "skew" bridge, and he did not see that there was any artistic objection to the relationship of the piers beneath the bridge to the direction of the road upon the bridge. The treatment beneath a bridge became a matter of very great interest, and could be made a great artistic improvement. In many kinds of arching and vaulting these problems could be made the very life of the subject. The scheme of the Corporation was so partial that it was rather difficult to form a correct opinion as to its effect. It created a wide causeway only so far as the bridge itself was concerned. The Corporation scheme was very drastic as far as the east side of the Cathedral was concerned, but he submitted that in dealing with the matter they ought not to omit the north and the south sides. Some distribution of the large capital expenditure upon the east side would give them an architectural lay-out on the north as well as the south side, which would be of very great value to London.

Replying to Mr. Forbes Lankester, K.C., Professor Pite said that to a large extent it was true to say that he had approached this matter as an opportunity which afforded itself for opening out St. Paul's, and he looked at the question mainly from the artistic point of view. At the same time, he admitted that questions of affording facilities for traffic should come into consideration. He thought that large sums of money should be spent in opening up views of St. Paul's, and as far as the Corporation's willingness and courage in dealing drastically with the east side of the Cathedral was concerned they had his blessing. His suggestion, however, was that if they were a little less drastic with the east side and took into consideration the other characteristics of the site they would see that the north side ought not to be omitted from consideration. He did not agree that a "skew" bridge would be difficult to construct, and he saw no objection to such a bridge either from a utilitarian or artistic standpoint.

In reply to the Chairman, witness said the only additional cost of his alternative scheme would be the cost of acquiring the warehouse of Messrs. Cook, Son, & Co. In regard to the question of the tramway, if the engineer was to say that under no circumstances must they allow trams to come where it was suggested they should, he would say, "Don't take the risk. St. Paul's is worth more to us for centuries than tramways are for generations."

The Chairman read a letter which he had received from the R.I.B.A., dated July 4, in response to a communication he had sent asking whether the Institute would like to give evidence at that inquiry, in which it was stated: "The announcement of the Corporation appointing three eminent architects to advise them on their proposals entirely meets the view of the Institute. Now that these gentlemen are appointed the Institute has no further views to express in the matter."

Professor Pite said he quite agreed with the action which the Institute had taken. The Corporation having consulted architects of sufficient eminence to advise them, the Institute could not and would not challenge as a matter of personal opinion the position of any of its members, good or bad.

Sir W. Emerson, in reply to Mr. Forbes Lankester, said he did not agree with Professor Pite that it was possible to make a fine architectural monument with a "skew" bridge. Such a bridge could be carried out in masonry, but he thought they would find the difficulties so great that they would have to build it either of steel or reinforced concrete.

Questioned as to the improved vista which Professor Pite thought would be given of St. Paul's if his scheme was adopted, witness said he considered it would be going out of the way to make a strained effect. It would destroy a great deal of the mystery of the Cathedral and the charm of it. The removal of the buildings between Old Change and St. Paul's would give a very fine north-east and south-east view of the Cathedral.

Mr. Forbes Lankester said he might say at once that the Corporation were prepared to accept the suggestion in the report, and to remove the old buildings between St. Paul's and Old Change.

Sir W. Emerson remarked that that would make a great difference to the view.

Mr. T. E. Collcutt, F.R.I.B.A., said he had taken great interest in the question before the Committee, and was one of the architects who went to the Corporation as a deputation on the matter. His objection to an 80-ft. roadway leading up to the south transept of St. Paul's was that on either side of the new roadway there would be buildings at least 80 ft. high, and to get a proper view of the dome and a proper effect of the vista the whole of the dome should be disclosed. Looking at it from that point of view, he should consider that the best plan which could be adopted would be a road some portion of which should be at least 160 ft. wide. He should say that from Queen Victoria-street, for instance, to the south transept the road should be at least 150 ft. or 160 ft. wide to get a proper view of the transept and dome of the Cathedral. He quite saw that that would involve enormous expense.

Mr. J. J. Burnet, F.R.I.B.A., gave somewhat similar evidence. He said that if the bridge was built, as the Corporation proposed, leading up to the east end of St. Paul's, it would give anybody approaching the Cathedral the idea that it stood upon a hill, and that was why he approved of the route.

Evidence having been given in support of the Bill by Mr. Leslie Vigers and Mr. Basil Mott, engineer, the Committee adjourned.

Resuming on Wednesday, Mr. Fitzmaurice, the Chief Engineer to the London County Council, gave evidence bearing on the practicability of the proposed subway tramway in connexion with the new bridge.

Mr. Somers Clarke, architect to the Dean and Chapter of St. Paul's from 1897 to 1909, said the wall of the south transept of the Cathedral was about 110 ft. or 112 ft. long and 10 ft. thick, while the footings must be 120 ft. high. They had gone east and west in its length, and in parts they were broken through the thickness up to the top and extending some distance down. There was evidence of sinking having taken place from the very early history of the building. It was obvious from the area over which the footings were spread that Wren himself was aware of the difficulties which were likely to arise. The footings of the Cathedral laid upon a layer of pot-earth of a depth of 18 ft. below the present level of the streets. Underneath that there came a layer of about another 18 ft. That got down into the gravel, which was not very solid stuff, standing upon the London clay, and at the bottom the stuff was very loose and there was a stream of water. There was evidence on the face of the building itself of settlements having taken place from time to time, and very soon after the Cathedral was built. There was very strong evidence of settlement upon the face of the south tower. The top of it was 18 in. out of the vertical, and the dome mass was broken away from the choir. They had no reason to think that those movements were at an end. He had seen the evidence of water having been taken away from the foundations when deep excavations were going on in the neighbourhood. He regarded the suggestion of bringing a subway tramway at the south side of St. Paul's as a very dangerous one, and he would refuse to be responsible for such an undertaking.

Mr. Riley, Superintending Architect to the London County Council, said he could not suggest any point which would justify the Committee in making any change in the alignment of the proposed new street.

Mr. Balfour Browne, K.C., having addressed the Committee on behalf of Messrs. Cook, Son, & Co., whose premises would be interfered with if Professor Pite's alternative scheme was sanctioned,

The Chairman, after the Committee had consulted in private, said:—"The Committee are of opinion that the scheme for the construction of the proposed new bridge, including the approaches thereto, is both in respect of architectural design and convenience of traffic the one best adapted to the public needs and best suited to the character of the site, and will report accordingly to the House."

The following admirable letter, which appeared in Thursday's *Times*, will be read with interest:—

To the Editor of the *Times*.

SIR,—In paragraph 8 of the consulting architects' report, given in the *Times* of to-day, the architects support their opinions by certain remarkable statements. They say:—"There is strong presumptive evidence that Wren did not design the side elevation of the Cathedral to be looked at from any great distance." It would be interesting to know on what authority the consulting architects base this statement. The river existed 250 years ago for Wren not less than for us to-day—far more so, indeed, as in his day the river was not obstructed by buildings in St. Paul's-churchyard of a banality that Wren could never have believed to be possible. As a matter of fact, in Wren's plan for rebuilding London a street is shown nearly at right angles to the south front; but, apart from this, Wren's plan for the rebuilding was made in 1668, and even the "warrant" design for St. Paul's was not completed till 1675.

1. The consulting architects further contrast "the bolder treatment of the west front and of the dome" with the "comparatively superficial ornamentation of the other wall surfaces." Surely these gentlemen in preparing their report must have omitted to study the south front of the Cathedral. By no stretch of imagination or the boldest misuse of language can the south front, with its Loggia of Corinthian columns, its pediment and rich decoration, be described as "superficial ornamentation"; and one would hardly have expected "eminent architects" to separate the dome from its substructure. That great design stands or falls as a whole.

2. The architects, stating that it has not been considered "necessary to arrange great roads leading to the side of the structure," say that this practice is one of "the best traditions of the [architect's] profession." It is nothing of the sort, but the consequence of the simple fact that the principal entrance to our Western cathedrals is at the west end, and it is merely common sense to approach directly the principal entrance in preference to others. The case does not occur where a cathedral stands in a large open space, and probably any architect, if given the choice, would prefer that his church or cathedral should be well seen from every point. Sir William Emerson suggested that "a great deal of the mystery and charm of St. Paul's would be destroyed by a long approach." One can understand the charm of the picturesque little buildings that sometimes nestle between the buttresses of the great Gothic churches of France and elsewhere, but the existing buildings of St. Paul's-churchyard —

3. The architects, in support of the Corporation scheme, quote the Greeks. They say:—"We may add that the Greeks—great artists—took especial care that the Parthenon should not be approached by a road directly leading up to it." Why drag in the Greeks to support a foregone conclusion on a problem in which nothing that they did has the slightest bearing? It is true that when the Greeks rebuilt the Parthenon they did not bring their road directly up to it, but it is perfectly well known that, at the date when the Parthenon was built, the position of temples had nothing to do with questions of axis lines, but was determined by such considerations as the sacrosanctity of the site of older temples, and it is not only irrelevant but an utter anachronism to ascribe to the Greeks of the time of Pericles modern theories of vista and alignment. Even if it were not so, even if the Greeks did deliberately disregard such things as axis lines, do the consulting architects seriously maintain that in schemes of civic improvement we are to ignore our great architectural monuments?

These are only some of the points open to serious criticism in this report. Its authors appear to have assumed that if the bridge is laid out on the axis line of the dome of St. Paul's it inevitably follows that the subway for trams must skirt the south side of the Cathedral, and in your account of the proceedings of July 12 opposition to any such proposal occupies a prominent place.

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But, as a matter of fact, able schemes have been prepared showing how it is possible to set the bridge on the axis line and yet keep the subway to the east of the Cathedral. I cannot find any consideration of these schemes in the report.

The report of the consulting architects will have been read with keen disappointment by those who had hoped for better things. Its bias is shown by the reference in the report to schemes for opening up St. Paul's as "side issues." Surely this, the architectural or monumental question, is to Londoners generally one of the most important questions of the case. It is on this that artists and public men joined hands, and that the House of Commons took the action that it did. It is a matter of regret that, with the exception perhaps of Mr. Collcutt, the consulting architects have not seen their way to placing themselves in line with the reiterated artistic opinion of the country. That opinion will be maintained not less strongly than before, in spite of the consulting architects' report.

July 12. TRADITION.

THE ARCHITECTURAL ASSOCIATION:

SECOND SUMMER VISIT.

THE intense heat was probably responsible for the small attendance at this interesting visit, which took place on Saturday, July 8, to Hill Hall, near Epping, by kind permission of Mr C. E. Hunter. A pleasant drive of about three miles from Epping Station leads to the Hall, which occupies an ideal situation on the level summit of a plateau commanding wide views in every direction over the well-wooded surrounding country. Its position is, indeed, remarkable, most Elizabethan builders having apparently preferred sheltered sites, but it is possible that the house which preceded the present one may have been placed for defence. The approach is by a very wide avenue with broad grass margins, centrally with the main entrance, which is from a carriage court surrounded by a low wall with piers. The general outlines of the house's history are at once apparent from the north or entrance front. The present building was erected by Sir Thomas Smith, who, in 1548, married the widow of the former owner, Sir John Hampden, and bought the reversion of the property. This worthy had an astonishingly varied Court career, extending through the reigns of Henry VIII., Edward VI., Mary, and Elizabeth. It says something for his capacity that, though loyal to the interests of the Protector Somerset, and falling with him, in 1550 he is again found in Royal employ under Mary. In 1557 he retired for a while and began to rebuild Hill Hall, but under Elizabeth he became Ambassador to France, where he remained four years. It is recorded that in 1568 he began to build the north and west sides of the house "stronger and more splendidly." In 1577 he died childless, and was buried in Theydon Mount Church, being succeeded by his nephew, from whom the present non-resident owner of the property is the direct descendant. Although the core of the house is Elizabethan, and a considerable amount of work of this period is still visible both externally and internally, the general effect is Georgian, and dates from the time of Sir Edward Smyth, the third baronet, who, in 1714, remodelled the house and completely rebuilt the east front.

The plan is quadrangular and is effectively laid out, but, while the external design of the building in its general lines is also good, its detail is poor and coarse in most cases. The entrance front is in the main Elizabethan work, and follows the local custom (during the Middle Ages) of having its excellent brick construction decorated by dressings in cement in imitation of stone. This method has been carried on in the later work, and it is possible that it is partly from the limitations of the method and partly from renewals that the mouldings and enrichments generally are so poor in quality. The texture of the old brickwork has been ruined by cleaning and pointing. The entrance is by a flat-pointed archway under a Georgian colonnaded projecting portico, above which is a group of three mullioned windows, with two sturdy Elizabethan chimney-stacks on either side; yet the imposition of a Georgian cornice and pediment surmounted by a quaint cupola successfully binds the whole into a not unpleasing composition. The east and south fronts face spacious lawns. Immediately surrounding the house on these fronts is a wide expanse of York flagging laid level with the turf with admirable effect. The east front is entirely Georgian, with central pediment containing the arms of Sir Edward Smyth and his first wife, Ann Hedges; it is two stories in height, surmounted by a balustrade with urns, and having an Order of Doric columns on lofty pedestals, which, by reason of the wide-spreading base mouldings used, actually appear to fulfil their real purpose of buttresses. The south front, also two stories in height, is topped by a steep roof with fine chimneys and Elizabethan dormers. Here, again, however, the whole is welded together by the erection of square-topped, three-storied, Georgian towers at the S.E. and S.W. angles, which, projecting on the southern side, enclose a delightful recessed terrace on the south front. The west front is relatively modern and in part unfinished. In the internal courtyard is some truly weird detail of superimposed Orders, distinctly not in accordance with rule.

Internally there is much good detail in panelling and joinery of the Georgian period. There are three fine staircases of varying dates, the latest an exceptionally spacious one with bracketed string and delicately contoured twisted balusters. The Hall is two stories in height, and extends through the full depth of the building from south front to courtyard, the first-floor corridor being effectively carried through it by an open colonnade along the courtyard side. A panel high up at the west end has the arms of Queen Elizabeth. A very fine Georgian chimney-piece, which originally stood inside the Elizabethan chimney-piece of the Hall has now been removed to the first-floor corridor. The house is full of fine old furniture, including some splendid specimens of Venetian and French work, and also contains numerous masterly water-colours (including one of the balustrade and baytree on the south terrace) and several portraits by Mr. J. S. Sargent, which alone were worth the visit to see.

Before returning to town a short visit was paid to St. John's Church, Epping, a characteristic work of the late Mr. G. F. Bodley, R.A.

The church has a nave of five bays, and chancel of two bays with a shallow sanctuary. The arcade is lofty and there is no clear-story or chancel arch, the barrel roof running without interruption from east to west. The west end has a pair of windows, while the chancel, screened and sumptuously fitted, has a large traceried window above the lofty coloured and gilded triptych. All the external details are on an extremely bold scale, and this is particularly true of the tower, which was completed as recently as 1908. It occupies an unusual and singularly effective position (in view of the site) at the south-east of the sanctuary, entirely detached from the main walls, though united to the church by a corridor and low clergy vestry, the base of the tower serving as a choir vestry. It is all extremely fine architecture, though very unlike any traditional Essex work. The angle of the tower bears the appropriate text, "A city set on a hill cannot be hid."

ARCHITECTURAL SOCIETIES.

The Royal Institute of the Architects of Ireland.

The following is "The Humble and Loyal Address of the Royal Institute of the Architects of Ireland to Their Most Excellent Majesties King George V. and Queen Mary";—

"May it please Your Majesties. We, your dutiful subjects, the President and Council on behalf of the Royal Institute of the Architects of Ireland, beg leave humbly and respectfully to approach Your Majesties with the expression of our loyal welcome on the occasion of Your Majesties' visit to Ireland.

House at West Bay, Dorset.
Messrs. Crickmay & Sons, Architects.

and to tender our most devoted and dutiful homage.

We confidently believe that the profession to which we belong, and which is so intimately associated with the progress of science and art throughout the Empire, will, under Your Majesty's beneficent rule, flourish in a long era of unbroken peace.

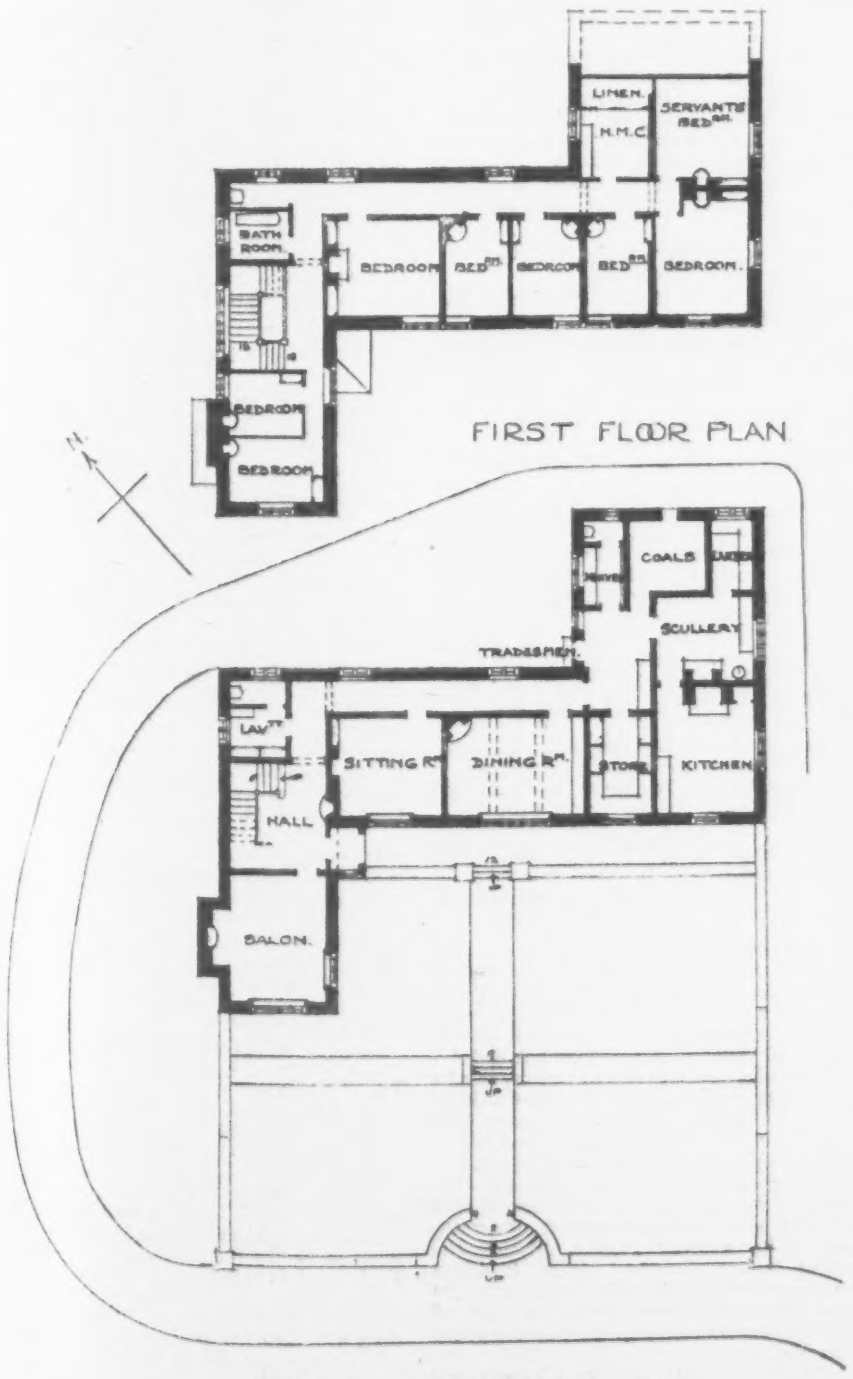
We earnestly trust that Your Majesty and our gracious Queen may be granted a long and glorious reign, and that we, your subjects, may have the felicity of extending our dutiful welcome frequently in the years to come.

Signed, on behalf of the Council,
ALBERT E. MURRAY, R.H.A.
(President),
C. A. OWEN, F.R.I.B.A.
(Hon. Secretary)."

HOUSE AT WEST BAY, DORSET.

THIS house is situate on the slope of the hills at West Bay, Dorset, overlooking the English Channel. It is built of Purbeck stone and covered with Lawrence's dark tiles.

The contractors are Messrs. Wakeham Bros., of Plymouth, and the architects Messrs. Crickmay & Sons, of Victoria-street, Westminster, S.W.



House at West Bay, Dorset.
Messrs. Crickmay & Sons, Architects.

ENGINEERING SOCIETIES.

The Society of Engineers (Incorporated).

The third vacation visit of the present session took place on the 7th inst, when, by permission of the Associated Portland Cement Manufacturers (1900), Ltd., a number of members of the Society and their friends visited the Swanscombe Northfleet Cement Works. It was at Northfleet that the earliest cement works were erected by the younger Aspdin, whose father had invented the product in 1824, and subsequently other works were erected by firms whose names have since become world-famous. The majority of these firms were combined in one company in 1900. The district in which these works are situated is peculiarly adapted to be the centre of the cement industry on account of the presence of unlimited supplies of chalk and clay, an ample quantity of fuel, and ready access to all parts of the world through the Port of London. The visitors were shown the chalk quarries adjoining the works, and the clay brought from the Medway. The amalgamation of chalk and clay in definite proportion is effected by batteries of washmills, the resulting slurry passing through a screening mill in a finely-divided state. The slurry then passes into the large mixing and storage tanks, and is finally pumped into rotary kilns, in which the contained water is evaporated, and the dry material thus obtained is heated up to a temperature of about 2,800° Fahr. The hot clinker then passes through rotary coolers, which extract the heat, and from thence is delivered to the grinding mills, in which the clinker is reduced to a very fine powder. During the final stage of the grinding process steam is injected into the mill, subjecting each particle of cement to a repeated process of superficial hydration, thus regulating the setting time, and turning out the cement in a condition for immediate use, thereby obviating the trouble of turning over the cement before use on the site of works. The visitors were shown the cooperages, where casks for packing cement for export are made by machinery, many of the machines being of a special character, and patended by the company. Tea was provided by the company for their guests at the conclusion of the visit, after which a vote of thanks to the company for their courtesy was proposed and heartily accorded.

GENERAL NEWS.

Professional Announcement.

Owing to the retirement of Mr. William Eade, the partnership hitherto subsisting between him and Mr. E. Thos. Johns, Architect and Surveyor to the Ipswich Education Committee, has been dissolved. Mr. Johns' practice will be continued as before; his new address is 8, Lower Brook-street, Ipswich, and his telephone number 669.

The Royal College of Science, Dublin.

The Royal College of Science, Merrion-square, Dublin, the foundation-stone of which was laid by King Edward, was opened by King George on Saturday, July 8. The

Sir Thos. Manly Deane, B.A., R.H.A.

buildings, illustrated in the *Builder*, 1906, September 29 and October 13, are the work of Sir Aston Webb, R.A., and Mr. T. Manly Deane, R.H.A., on whom a Knighthood was conferred at the recent ceremony.

Men of the Day.

In the issue of *Vanity Fair* for July 5 some particulars are given under this heading of the career of Mr. Frank Matcham, the architect of a number of recent theatre buildings. A coloured portrait supplement is given in the same issue, the title of which is "Architect Matcham."

Department of Architecture, University College.

An exhibition of drawings and designs made by the students in the Department of Architecture at University College will be held from Friday, July 21, to Saturday, July 29, inclusive. The exhibition will be opened on Friday, July 21, at 5 p.m. by Mr. Leonard Stokes, F.R.I.B.A., President of the Royal Institute of British Architects. Tickets for the opening ceremony can be obtained from the Secretary of University

College. The exhibition will be open on weekdays from 10 a.m. to 5 p.m. on the days following the opening to July 29. Tickets of admission are not required except for the opening ceremony.

University College Chemical Laboratories.

At the recent prize distribution at University College, London, the Provost read a letter which had been sent to Prince Arthur of Connaught, as President of the Appeal Committee, on behalf of the proposed new chemical laboratories, by Mr. R. C. Forster, announcing a further gift of 30,000*l.*

Pumping Station for the London Hydraulic Power Company.

The latest of the Company's five pumping-stations for the supply of hydraulic power in London is situate in Grosvenor-road, Westminster, about 300 yds. westward of Vauxhall Bridge. It has a frontage to Grosvenor-road, and extends for a depth of 470 ft. therefrom, comprises reservoirs for water-settling, engine-house, boiler-house, hydraulic accumulator tower, coal store, filter-house, overhead tanks, wharf and coal handling plant, boiler-feed water softening and measuring plant, influx, efflux, and hydraulic pipe subway, with a subway under Grosvenor-road connecting the pumping-station with the river wharf, together with resident foreman's house, men's messroom, workshop, storeroom, foreman's office, and sundry appurtenances. The Chief Engineer to the Company is Mr. E. B. Ellington, M.Inst.C.E., Westminster.

Public Library, New York.

The New York Public Library in Fifth-avenue and Forty-second street was recently opened by President Taft. The building was designed by the late J. M. Carrère and his partner, Mr. Thomas Hastings, and has cost more than 2,000,000*l.* There is room on the shelves for four million volumes; the site, valued as worth some 4,000,000*l.*, was given by the municipal authorities, who also defrayed the cost of the fabric, which was begun ten years ago.

Report of the Joint Committee on Reinforced Concrete.

The Joint Committee on Reinforced Concrete have now completed their second report, and it will shortly be on sale at the Royal Institute of British Architects. In an introductory note the Committee state that since the issue of the first report in 1907 the use and knowledge of reinforced concrete for architectural and engineering constructions have steadily increased. It therefore appeared desirable that it should be reconsidered in the light of further experience, and this second report is the result of the Committee's labours. The section on "Materials" has been modified in certain details. The section on "Methods of Calculation" has been recast in form, and the standard notation (proposed by the Concrete Institute) has been adopted. The sub-section on "Columns" has been revised, and the formulæ proposed have been recast, so as to include the cases in which the lateral or helical binding is a material factor in the strength. The suggestions which have been made from time to time by institutions and individuals have been of much value and have been fully considered. Professor Unwin, F.R.S., Captain J. Gibson Fleming, R.E., and Messrs. Wm. Dunn and E. Fiander Etchells contribute appendices. The size of page has been reduced for convenience of handling, and the work will be issued in stiff covers at the price of 1s.

Parish Church, Carshalton.

A pageant was held last week (on July 5-8) in aid of the Completion Fund of All Saints' Church. The church, with the exception of the chancel, south aisle, and tower, has been rebuilt during the past few years, at a cost of 13,000*l.*, after designs by Sir A. W. Blomfield, which provided for the erection of a new chancel, vestries, organ-aisle, and nave, and the restoration of the old chancel for uses as a chapel. The low embattled tower, constructed of rubble-stone and flint, stood between the chancel and nave, and it is believed that the chancel was the original church, the nave having been added *temp.* Richard II., and extended *temp.* William III. In the church were set up a monument—with an effigy by Rysbrack—to Sir William Scawen, and an altar tomb; *temp.* Henry VII., to Sir Nicholas Gaynesford, his wife, and children; the figure of Lady Gaynesford is remarkable for a very large headdress.

Proposed Building Over a Burial Ground.

At a sitting of the Consistory Court of St. Albans, held at Chelmsford on July 7, a petition was preferred by the Rector and Churchwardens of St. Mary's, Chelmsford, for a faculty consenting to the erection in the churchyard of columns to support an iron staircase for purposes of an emergency exit from the Shire Hall, which abuts on the burial ground of the church. Mr. A. B. Kempe, Chancellor of the Diocese, decided that he had no power to grant the faculty prayed for, inasmuch as the Disused Burial Grounds Act prohibited the erection of any building over a disused burial ground saving for the extension of a church, chapel, or meeting-house.

Kingswood Estate, Surrey.

The Walton Heath Land Company, Ltd., have bought from Mr. C. Bonsor an estate of about 650 acres, near Walton Heath. They propose to convert the property into a residential estate, with houses to stand within their own grounds of from ½ acre to 1 acre in extent. The houses will be of a more expensive kind than those which are usually built on such properties, and some are ready for occupation.

All Saints' Church, Highgate.

At a sitting of the Consistory Court of London on July 5, Dr. Tristram, K.C., Chancellor of the Diocese, granted a faculty for the enlargement of this church by the addition of a north aisle and vestries, and an extension of the chancel, at an estimated cost of 2,500*l.* The new buildings will be erected, in part, in the churchyard, which is unconsecrated and has not been used for interments. The church was built in 1863-4, after the designs, we understand, of Sir A. W. Blomfield.

The Quantity Surveyors' Association (Incorporated).

Mr. C. W. Ball, M.S.A. (Southsea), has been elected President of this Association for the ensuing year, and Messrs. T. J. Carless and Henry Riley, Vice-Presidents.

COMPETITION NEWS.

Manchester Art Gallery Competition.

As a reply to several letters published in the *Manchester Guardian* taking exception to the assessor's decision in the preliminary competition for the Art Gallery, a number of Manchester competitors have signed a joint letter stating that they consider that the Corporation has conducted the competition on excellent lines, and that there is nothing in the assessor's report that would lead them to think that the selection of the ten final competitors is anything but a fair one. We understand that it is strongly felt by many architects in Manchester that, although there are minor points in the assessor's report which may not commend themselves to them, the competition as a whole meets with their approval, and it is a very unfortunate occasion upon which to pile up minor grievances against the assessor, calculated to discourage the appointment of a professional adviser by public bodies in the future.

Clydebank Public Library.

We learn from the *Glasgow Herald* that at a recent meeting of the Clydebank Town Council it was reported that fifteen designs had been submitted for the new public library, and that Mr. James Miller, A.R.S.A., architect, who was appointed assessor, recommended that the designs of Messrs. Gardner, Miller, & White, Glasgow, should be accepted. "The Library Committee by a majority approved of these plans, subject to their being submitted to the inspection of a librarian. An amendment was moved that the plans of Messrs. Stewart & Paterson, Glasgow, be adopted. On a division the plans of Messrs. Gardner, Miller, & White were agreed to by six votes to five." An award which is subject to the opinion of committeemen untrained in architecture seems rather inglorious.

Church Schools, etc., Doncaster.

In a competition recently held for a new Unitarian church, schools, lecture hall, and institute at Doncaster the scheme submitted by Messrs. A. J. Dunn, F.R.I.B.A., and J. Bernard Mendham, of Birmingham, was adopted, and the architects have been instructed to proceed with the work.

International Exhibition at Tokio in 1917.

The "Bulletin Commercial" (Brussels) states, on the authority of the Belgian Consulate-General at Yokohama, that the Committee of the International Exhibition to be held at Tokio in 1917 have opened a competition for the general plan of the exhibition installations. One prize of 3,000 yen (about 306*l.*), two of 2,000 yen (about 204*l.*), and three of 1,000 yen (about 102*l.*) may be given. Foreigners may compete. Proposals will be received up to September 30 next at the office of the Grand Japanese Exhibition, Department of Agriculture and Commerce, Kobi-kicho, Kyobashi-Ku, Tokio.

Capital City at Canberra, N.S.W.

Particulars of this competition have been printed in the *Builder*, and, with premiums amounting to 3,000*l.*, many architects will desire to consider the matter. We suggest, however, that intending competitors will be wise to defer putting their ideas into shape until full investigation has been made into the conditions. The Competition Committee of the Royal Institute of British Architects are pursuing inquiries, and until a report is made the scheme cannot be recommended. It will be noticed in the conditions, among other unsatisfactory clauses, that "the designs will be submitted to a Board consisting of an engineer, an architect, and a licensed surveyor," who are unnamed; then the Minister of State will adjudicate upon the designs, such adjudication to be final and without appeal. In the first place, it may be doubted if the professional advisers to be appointed will be of sufficient standing to give confidence to competitors that their designs will be adequately studied; and, in the second place, no architect of worth will submit to the condition that his ideas are to be judged finally by a layman who is primarily a politician.

BOOKS.

British and Foreign Building Stones. A Descriptive Catalogue of the Specimens in the Sedgwick Museum, Cambridge. By JOHN WATSON. (Published by the University Press, Cambridge.)

MR. JOHN WATSON'S treatise on this subject, which has been published by the Cambridge University Press, comprises, *inter alia*, a descriptive catalogue of the specimens of building stones of all countries, recently collected and arranged in the Sedgwick Museum at Cambridge.

Although primarily intended for the use of students of geology, the work contains a vast amount of valuable practical information relative to the colour, texture, weight, crushing strain, porosity, and other characteristics of building stones, which should cause it to be regarded as a welcome addition to all architectural libraries.

The descriptive notes, which precede the catalogue, include the names and dates of erection of many important buildings in which some of the various building stones collected in the Museum have been used.

Each specimen of stone placed in the Museum bears a label containing the following particulars, viz.:—

(1) The name by which the stone is best known to commerce.

(2) The stratigraphical position of the stone, or, in the case of an igneous rock, its petrological designation.

(3) The names and the locality of the quarry whence the specimen was obtained.

(4) The name and address of the donor of the example.

As Mr. Watson points out in the Introduction to his work, "quarry owners, architects, and others" are not always in absolute agreement as to the designations by which a particular rock is recognised in the building-stone industry, nor "is the name adopted by them always in accordance with geological nomenclature." For example, in commerce, stones which have no affinity whatever with those rocks are frequently distinguished as granite, the "Petit Granit" of Belgium, which belongs to the carboniferous limestone, being a notable instance.

In addition to notes on the physical characteristics of a stone, its chemical composition is given in those cases in which it is known, and this notwithstanding the fact that chemical tests and analyses are often regarded as unreliable guides in determining the qualities of building stones.

But whilst recognising the fact that in many cases an analysis of its chemical composition is not, as a rule, so useful to the practical man as a knowledge of the physical properties of the stone with which he has to deal, yet Mr. Watson rightly lays stress upon its importance.

As an instance—"The atmosphere in and around large cities and centres of industry is usually charged with gases and impregnated with various acids. These acids, when caught by the falling rain are deposited in solution on the buildings, and often, by chemical action, cause a decay of the stone. It is, therefore, important to ascertain the chemical composition of a rock and thus arrive at its susceptibility to decay under certain atmospheric influences."

The necessity of taking into account the two factors of weight and volume is lucidly pointed out. Thus, when stone is required for vaulting or other similar work, "the selection of one light in weight or of low density" is very desirable. On the other hand, in the construction of quay or dock walls materials of high density are requisite, because a stone when immersed in water loses a very considerable part of its effective weight. Furthermore, if, "compared with its weight, the stone possesses a very large bulk, it presents a corresponding large surface to wave action, thus increasing the scope or field of disturbing force. The two factors of weight and volume must, therefore, be taken into consideration; they show that, the smaller the surface area of a stone and the greater its unit weight, the less likelihood there is of disturbance." In other words, the higher the specific gravity the greater the stability.

In the view of the author of the treatise under discussion, the test of compression or crushing strain is generally treated by architects and workers in stone with less consideration than it deserves, because whilst the resisting power of most building stones greatly exceeds the strain which they are usually required to support, yet the test is extremely useful as an aid in determining their weathering properties. For the durability of a rock is dependent either upon the manner of contact of the mineral particles of which it consists, or upon the strength of the particles themselves. And in the latter case its durability is determined by the strength of the weakest material, which is abundantly distributed throughout the mass. "Thus if the interstitial matter between the grains of sandstone is weak or lacks cohesion, the stone will be disintegrated when subjected to abrasion or exposed to the influences of the weather, however strong the grains themselves may be. A rock may consist mainly of quartz grains, and yet be so soft as to crumble when compressed between the fingers, while another rock, having the same general composition in which the grains are firmly cemented together may be one of the most durable of stones."

Again, the test of porosity or ratio of absorption is one of extreme value and, as such, ought to be considered in addition to other physical features of building stones. Amongst resulting evils walls built of a stone possessing a high ratio of absorption are, of course, liable to be damp, and this is more especially the case if, in addition to being porous, the stone used is fine in texture, for water penetrates further, and is retained longer, in small cavities than in large ones.

On microscopic examination, such a stone will probably be found to contain minute fissures, through which water will be absorbed to a considerable depth by capillary attraction. Moreover, danger from frost depends "not so much upon the amount of absorption as upon the size of the pores," and rocks with large pores stand frost better than those with small ones, because they do not retain the water which they absorb.

It is well known that, although a certain class of stone may have proved its durability in a particular building, yet it is not necessarily a guarantee that the same rock will give equally good results if employed for structural work in another district, and Mr. Watson duly emphasises the fact in the following words, viz. :—"Geographical and meteorological variations have to be considered, for a sudden change of temperature is a powerful agent in the destruction of rocks, because, as a rule, stones possess low conductivity for heat and but slight elasticity. Rocks frequently reveal a tendency to decay when placed in a position which is much exposed to the sun, whereas the building remains perfect if it is shaded or has a northern aspect. . . . Two striking examples may be referred to—Somerset House, in London, built of Portland stone from the upper division of the Jurassic system in Dorsetshire, is much more decayed on the south side than on the north; and York Minster, built of magnesian limestone, is also more decayed on its southern than on its northern aspect."

A changeable climate may also affect the durability of stone, whilst the presence of corrosive substances in the air—or even of much moisture—will cause a rock to disintegrate more rapidly than it would in a purer or dryer atmosphere; and, although constructed with the same stone, buildings in the country, owing to a growth of lichens, which frequently covers the entire surface of the stonework, and thus affords some protection against the ordinary causes of decomposition, are often more durable than those in populous and smoky towns.

It is generally admitted that nearly all stratified rocks used for construction should be placed in the building with the bed of the stones as nearly horizontal as possible, and that the exposed surface should be formed by a cross-section of the natural divisional planes. Thus placed the stone is best able to resist atmospheric disintegration, inasmuch as it occupies in the artificial structure an approximately similar position to that which it originally occupied in nature.

This well known principle is of such extreme importance as to render it incumbent upon those responsible for the carrying out of structural work in stone to be able to discriminate with absolute accuracy the plane of the bed of any building stone.

Although in many rocks the direction of the bed is easily distinguishable, in others, owing to their evenness of grain, it is extremely difficult to ascertain. Rocks known as "free stone" are included in this latter category, and the chances of discrimination are minimised if, as is often the case, the stone is roughly trimmed down to a rectangular shape immediately after it has been quarried.

Most rocks, especially those of the limestone and sandstone species, undergo a process of hardening on exposure to the atmosphere after being quarried. This result has been explained on the supposition that the water with which the stones are permeated holds in solution or suspension a small amount of siliceous, calcareous, ferruginous, or clayey matter which, on exposure to the atmosphere, is drawn by capillary attraction to the surface of the block and evaporated. "Thus the dissolved or suspended material is deposited, and serves as an additional cementing constituent to bind the grains more closely together."

Whether the theory be right or wrong, there is no doubt that the process of "seasoning," which, in this case, means hardening, is one that should invariably be insisted upon. It is on record that Sir Christopher Wren rejected any stone for use in the erection of St. Paul's Cathedral which had not been quarried and exposed to the atmosphere for three years.

We agree with Mr. Watson that colour forms an important factor, from an architectural point of view, in the selection of a building stone. The range of colours from which a selection can be made is an extensive one, and facilities for transport are now so great that a choice of colour can be secured for almost any neighbourhood. But, "although from a decorative point of view the beauty of stone depends on its effective appearance, to the architect and builder, as well as to the student of economic geology, there is a beauty in a good stone beyond that which appeals openly to the eye—a beauty more subtle, requiring a scientific as well as an artistic appreciation—the impression it gives of strength and suitability for its purpose."

Of the wealth of information contained in the descriptive notes on British, colonial, and foreign building stones the space at our disposal does not admit of more than a few examples.

Under the section "Igneous Rocks (Plutonic)," the physical properties and chemical composition of British granite obtained from Cornwall, Devonshire, Westmorland, Cumberland, Leicestershire, Wales, the Isle of Man, Scotland, Ireland, Jersey, and Guernsey are concisely described, whilst under "Igneous Rocks (Volcanic)," notes are given upon the green slate stone obtained from the Borrowdale quarries in Cumberland, the Melrose Agglomerate, and Dolerites from Scotland, and the Tardree stone from Co. Antrim, Ireland.

Polyfant stone (Cornwall), Salcombe stone (Devonshire), and St. Catherine stone (Argyllshire), are dealt with under the section on "Metamorphic Rocks"; and that on "Sedimentary Rocks" comprises many of the geological formations known as the Cambrian and Silurian, Devonian and old Red Sandstone, Carboniferous, Permain, Trias, Jurassic, Cretaceous, Pleistocene, and Recent; and in the section on "Colonial and Foreign Building Stones" the same order is followed.

There is no doubt that Mr. Watson has produced an excellent manual upon a subject which, at least in its scientific and geological aspect is but little understood by the practising architect of our day, and we trust that his laborious efforts will meet with the prompt recognition and appreciation they deserve to receive from all who are interested in the study of building stones, which the author has presented in a form which appears to us to be at once scientific, practical, and interesting.

Tourist Guide to the Continent. Edited by PERCY LINDLEY. Illustrated and with maps. (London: 30, Fleet-street, E.C., and 12A, Regent street, W. Price 6d.)

THIS useful little work is the Great Eastern Railway Company's new illustrated *Tourist Guide to the Continent*. Among its features are particulars of new tours, *viâ* Holland, in North Germany, including the Harz Mountains and Thuringian Mountains; in South Germany, of the less-known side valleys of the Rhine; in Belgium, *viâ* Antwerp, of fresh tours in the Ardennes and old Flemish cities, and a series of continental maps. A chapter on "Tourists' Travel Talk," a vocabulary in English, French, and German, has been added.

Arc Lamps and Accessory Apparatus. By J. H. JOHNSON, A.M.I.E.E. (London: Constable and Co., Ltd. 1911. Pp. 132. 1s. 6d. net.)

THIS is another of Constable's electrical installation manuals, written for the benefit of contractors, wiremen, and engineers. As a guide to the choice of arc lamps for particular requirements the book should be generally welcomed, although it should be noted that several varieties of arc lamp are not mentioned. The notes of the author are of practical nature, and mathematics have been purposely excluded. We are sorry to see that the policy of exclusion has also been applied to the index, which ought always to be considered an essential adjunct to technical handbooks.

FIFTY YEARS AGO.

From the *Builder* of July 13, 1861.

The Foreign Office Designs.

IN the Commons, on the 8th inst., before the House went into committee of supply, a long and amusing discussion took place on the question (if it can still be called a question) of the style of the design for the new Foreign Office; involving, of course, a re-consideration of the respective merits of the Gothic and Italian styles of architecture.

Lord Elcho commented with some severity upon what he called the Palmerstonian style of architecture, and urged that Mr. Scott's design, or rather Lord Palmerston's, was altogether unsuited to the country, the climate, and the purpose to which it was to be devoted; and that a pure Gothic was that of which the country would approve. Mr. Scott had fallen into error in allowing himself to act as the mere draughtsman of the noble lord at the head of the Government.

EDITORIAL SUMMARY.

Our leading article, "An Interesting Experiment," deals with a report of the developments that have followed the opening of the first portion of the Protestant Episcopal Cathedral, New York.

Our second leading article (p. 32) is on "The American Academy in Rome," dealing with the scope of the newly-organised Academy.

Notes (p. 32) include: "As Others See Us"; "The Teaching of Art"; "London County Council Cottages Purchase Scheme"; "St. Paul's Bridge"; "Carnarvon Castle."

A Select Committee of the House of Commons has been considering this week the Bill for constructing a new bridge across the Thames at St. Paul's Cathedral. A report of the proceedings and the report of the three architects consulted by the Corporation in regard to the scheme will be found on p. 33.

Some notes of a visit of the Architectural Association to Hill Hall, near Epping, and to the Church of St. John, Epping, will be found on p. 36.

Book Notices (p. 38) include: "British and Foreign Building Stones."

Correspondence (p. 40) includes letters on: "Builders' Tools in the Middle Ages"; "Questions for Builders"; "National Insurance and Housing."

The Monthly Review of Construction (p. 43) contains: "Notes on Some Definitions used in Constructional Mechanics" (with diagrams); "North Surrey Schools, Anerley"; "Exhibition Buildings"; "Compressol System of Foundations"; and Notes.

The Building Trade Section (p. 47) includes: "Scaffolding: Telescopic Towers and Masts"; "The Mediæval Builder's Labourer"; "Projected New Buildings in the Provinces"; "Applications under the 1894 Building Acts," etc.

A brief report of the opening proceedings of a Town Planning Conference at West Bromwich will be found on p. 51.

Law Reports (p. 51) include: "Dispute as to a Party Wall"; "Contractor's Action against Building Owner";

MEETINGS.

TUESDAY, JULY 18.

Northern Architectural Association.—Annual excursion, to Wynyard Hall and grounds. Meet at Stockton Station at 11.12 a.m. Visits to Stockton Parish Church and churches at Billingham and Norton.

WEDNESDAY, JULY 19.

Northern Architectural Association.—Annual excursion.

FRIDAY, JULY 21.

Architectural Association.—Annual exhibition of students' work. 3 p.m. to 6 p.m.

SATURDAY, JULY 22.

Institution of Municipal Engineers (Eastern District). Annual meeting at Goode's Hotel, Marine-parade, Yarmouth. 2 p.m. A paper, "Construction, Maintenance, and Repair of Highways," by Mr. W. Astley Norris, Surveyor to the Swaffham Urban District Council, will be presented for discussion.

CORRESPONDENCE.

National Insurance and Housing.

SIR,—As so many of your readers are deeply interested in and have a practical knowledge of the housing problem, may I be permitted to ask for their consideration of an aspect of the National Insurance Bill, which, so far as I have seen, has not hitherto received much attention? I refer to its probable effect upon the provisions of houses for the class of persons on whose behalf the Bill is promoted—"employed persons" whose income is below 160*l.* a year.

Would some of your expert readers examine the following particulars to ascertain how far they correspond with experience? If they are approximately correct, it would seem that the employer's contributions, in so far as they concern the "housing of the working classes," will ultimately be met by an increase in rents, without being of any benefit to anyone concerned, whether employer, workman, or property-owner. An exception should perhaps be made in the case of the owner of existing "slum" tenements, whose function of "sweating" property always finds its opportunity for exercise when there is a tendency towards increase in the rents of new decent dwellings.

I do not propose to refer to the 51st clause (really a property-owner's question), which, if not materially altered, must add enormously to the rents. But this will occur after the builder has ceased to have any direct interest in the property. The difficulty is obvious of framing any scheme to prevent the sick benefit from becoming in practice a grant in aid of rents; whilst, on the other hand, any curtailment of the power of the landlord to recover rent must increase the rent by the insurance value of such risk of loss. I am only concerned, however, at the present moment with the effect of the employer's contributions in increasing rent.

The matter suggests itself to me in the following way:—

If the employer is a builder, his contribution is 5½d. in respect of every payment of one week's wages (sometimes of part of a week). If the average wage of all his employees is 30s. a week, the addition to the cost of wages (with about 10 per cent. profit) would be 1¾ per cent.

If the employer is a manufacturer of building materials and the average weekly wage which he pays is 22s., the new impost (with manufacturers', merchants', and builders' profits) will result in about 1½ per cent. being added to the cost of the materials in the house.

Now, supposing, as in the London County Council block buildings, the building cost per room averages 120*l.* and the cost of labour and materials is two to one, then:—

	£	s.	d.
1¾ per cent. on 80*l.* for labour is ..	1	8	0
1½ per cent. on 40*l.* for materials is	0	12	0
Total	£2	0	0

To provide for this additional outlay would involve an addition to the rent of two, three, or more rooms of from 2d. to 3d. a week, if no increase is made to the single-room rents.

Supposing it is the case of the speculating builder, who is really the chief purveyor of housing accommodation in the suburbs. He builds a house to sell at, say, 230*l.*, with a ground-rent of 5*l.* 10s., or lets it to a weekly tenant at 12s. The building cost may be apportioned as follows:—Profit, 20*l.*; cost of labour, 140*l.*; cost of materials, 70*l.* Whether there is another profit on the site value does not concern this question. But on the building cost the addition will be:—

	£	s.	d.
1¾ per cent. on 140*l.* for labour is ..	2	9	0
1½ per cent. on 70*l.* for materials is	1	1	0
Total	£3	10	0

To maintain the same ratio between building cost and rent will involve an addition to the latter of 2½d. per week, which in practice would tend to become 3d.

It may be urged that all these extra costs will, as the result of competition, be paid out of profits. But competition has already exerted all the influence it can, with the result that the standard of the house provided by speculative builders has steadily risen. The only fresh element of competition is in the exemption of foreign-made materials from this new charge, thus penalising the British-made goods.

The ultimate effect of the employers' contribution would thus appear to be either a deterioration in the quality of the house or an increase of rents.

I have written with a view to London conditions; if some of your readers would consider the question under the conditions prevailing in other parts of the country it might prove useful. J. WALLIS CHAPMAN.

Builders' Tools in the Middle Ages.

SIR,—In the interesting article in your last issue, the womble or wimble is said to be an early form of bradawl.

This is an error. It is still in use, and called by the same name by boat-builders and wood shipwrights in the west and Midlands.

It is an early form of brace, but with a fixed bit made entirely of wood.

No doubt the brace and movable bits is an improved womble.

The latt axe is the plasterer's lath hammer—a short tool for use with one hand, a small axe at one end and a hammer at the other end of the head. Latt is still the north-country name for lath.

The hod had a short handle till quite the middle of the last century for ease of filling. The labourer put the handle of the shovel between his legs, and, holding his hod with one hand, filled the hod with the other hand.

Gloucester. ROBERT PHILLIPS.

Questions for Builders.

SIR,—"Builder's Manager's" letter opens up a subject which needs very ample discussion. It is neither to the benefit of builder or public that hampering regulations or practices should be recognised, whatever their source.

Responsible officials and most architects of standing do not go out of their way to prejudice the interests of reputable builders. The question is, Where do these practices begin? The matter should be discussed freely, for it is desirable that the builders who have reputations to lose should not be sickened by the multiplying difficulties. It will be conferring a benefit if the *Builder* will open its columns for discussing the matter. JUSTITIA.

INTERCOMMUNICATION COLUMN.

Discharge from Pipes.

SIR,—Can you please tell the discharge per gallon per minute through a 6-in. diameter glazed pipe laid level its whole length of 260 ft., and having six bends in same? These may not matter, the head of water not more than 1 in. above top of pipe at inlet.

I really want to get a supply of 250 to 300 gallons per minute under circumstances named, and must I use 6-in. pipes, or what size? E. POTTERTON.

*** The following are discharges calculated for pipes of different diameters with 1-in. head, allowing for loss of head by six bends:—

Diameter of Pipe.	Gallons per minute.
6 in.	37
9 in.	107
12 in.	220
14 in.	340

It would be advisable to raise the level of the supply pond if possible, so as to secure a greater head of water.

In any event, care must be taken in executing the work to see that the conditions stated are duly complied with.

ILLUSTRATIONS.

National Library of Wales, Aberystwyth.

THE foundation-stone of this building is to be laid by his Majesty King George V. to-morrow (Saturday) on a site consisting of 4 acres of land on a hill quite near the town. The position of the site, its height above the level of the new approach road from Penglais Hill, with the necessary steps and terracings as a base, called for a frontage line of buildings as strong and extended as possible.

The central block, containing the administrative offices, with the main entrance and great flight of steps to it, is therefore flanked on each side by the library hall and exhibition gallery blocks respectively. Beyond, on the north, the line is extended by the domed refreshment and heating building with its portico ending the upper terrace, and to the south by the librarian's residence and a small memorial hall, the length of the whole frontage extending to more than 500 ft.

The main block of buildings as designed will form four sides of a square, with a frontage of well over 250 ft., and a depth of the same dimension. The smaller blocks are grouped around and extend beyond these dimensions. The central part of the front block will consist of administrative offices and the main entrance,

leading to a public hall in the centre of the quadrangle. From this central hall access will be obtained (1) to the great library hall on the north-western side; (2) to the exhibition block on the south-eastern side; and (3) to the Department of MSS., which will be built diagonally across the quadrangle.

The principal book storage is provided by means of "book-stacks," which will form the fourth side of the square block of buildings. The first stack will provide room for about 425,000 volumes; and two further stacks of nearly the same capacity can be erected beyond the first whenever required.

Opening out of the main hall and the exhibition hall, the architect, Mr. Sidney K. Greenslade, A.R.I.B.A., whose designs were selected in a competition limited to six nominated architects, has arranged for a series of buildings suitable for storing special collections of exceptional value, which it may be desired to keep together; and it is hoped that, as time goes on, possessors of very fine collections of books will give or bequeath them to the National Library, where they will become permanent memorials of their owners.

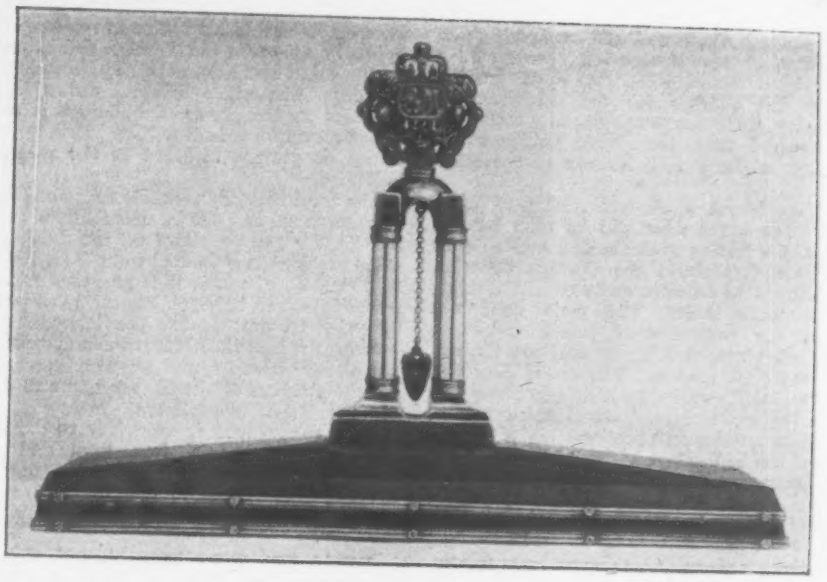
The great library hall will be in length 165 ft., the width 47 ft., and the height 38 ft. The books will be stored in alcoves around the room, with galleries above, the width of the hall between the alcoves being 27 ft. Tables for readers will be arranged in the centre of the hall and in the alcoves on each side. This part of the building will provide storage for 150,000 volumes.

The central portion of the building forming the main front will contain the administrative offices, and will include a Council chamber, rooms for the President and the librarian and other members of the administrative staff. The principal entrance will be in the centre of this block, leading by a wide corridor to the central hall.

The octagonal central hall will be 42 ft. in diameter to the walls, and 25 ft. between the columns. The corridors also extend from the central hall to the library hall, to the MSS. department, and to the print-room, with staircases on each side leading to the exhibition-room. On the first floor the gallery behind the columns, which may be used for special exhibition purposes, connects the whole of the upper floors of the building. The height of the central hall to the crown of the ceiling will be 50 ft., and 75 ft. externally from the ground level to the top of the cupola.

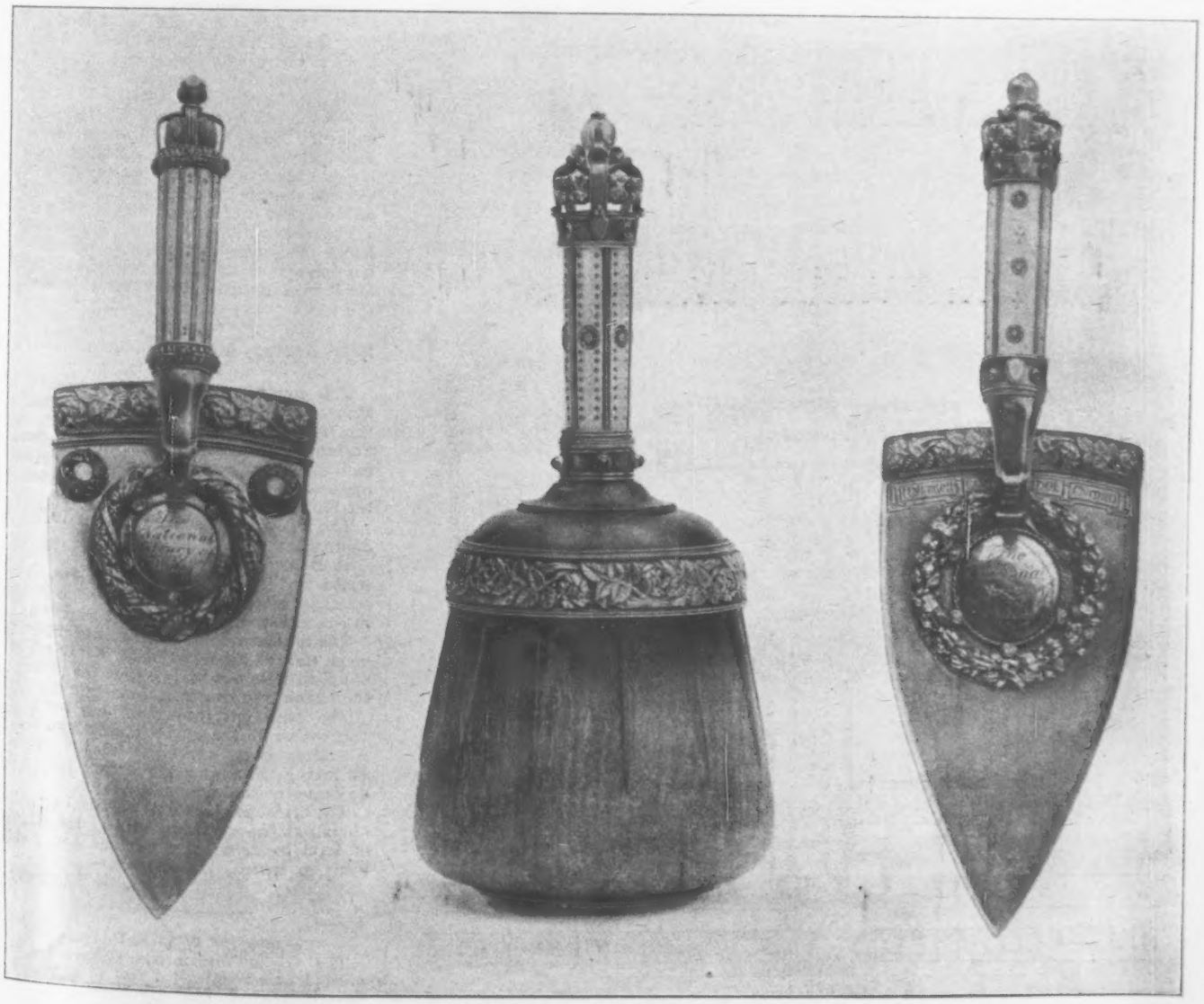
The central hall and its approaches have been so designed as to offer facilities for the display of sculpture in the form of statues, busts, portraits, and other memorials of eminent Welshmen and Welshwomen, and great benefactors to the library. Special positions in the grounds and on the terraces surrounding the buildings have also been arranged for memorials of larger dimensions.

The MSS. department has been arranged to secure the maximum of security against perils of all kinds, together with abundance of light and quiet. The reading-room for this department is placed in the centre, with stacks for the storage of MSS. on each side



Level for Use at the Ceremony of Laying the Foundation-Stone of the National Library of Wales, Aberystwyth.

Designed by Mr. Edward Spencer. Made by the Artificers' Guild.



Royal Trowels and Mallet for Use at the Ceremony of Laying the Foundation-Stone of the National Library of Wales, Aberystwyth.

Designed by Mr. Edward Spencer. Made by the Artificers' Guild.

and in galleries above, and when complete these will allow of the storage of between fifty and sixty thousand MSS. A room for the keeper, and another for the exhibition of interesting MSS. requiring special protection, are arranged near the MSS. reading-room. The first contract includes one of the MSS. stacks.

The south-east block will consist of three floors. The lower floor will be used for the storage of a library of duplicates, available for circulation throughout the thirteen counties, and possibly to scholars and students residing beyond those limits. The main floor will contain the collection of prints, drawings, maps, and plans, and the general art library, with tables for readers. The upper floor will be an exhibition gallery, where interesting and rare books, fine buildings, prints and drawings, and other exhibits within the limits of the Charter, will be displayed. This block is of the same dimensions as the library hall.

The lower floor runs beneath all the buildings already described. This floor will be over nearly the whole of its area, above the ground level, which will enable it to be perfectly lighted, and it will be appropriated to the storage of bound newspapers, specifications of patents, Parliamentary papers, etc., with receiving, packing, and storage rooms for the whole building.

Throughout the building a standard height of 7 ft. 6 in. from gallery to gallery, including book-stacks, and of 15 ft. for the height of rooms, has been adopted, which produces a dead level of floors throughout and will enable a book-truck to be wheeled easily round the entire buildings.

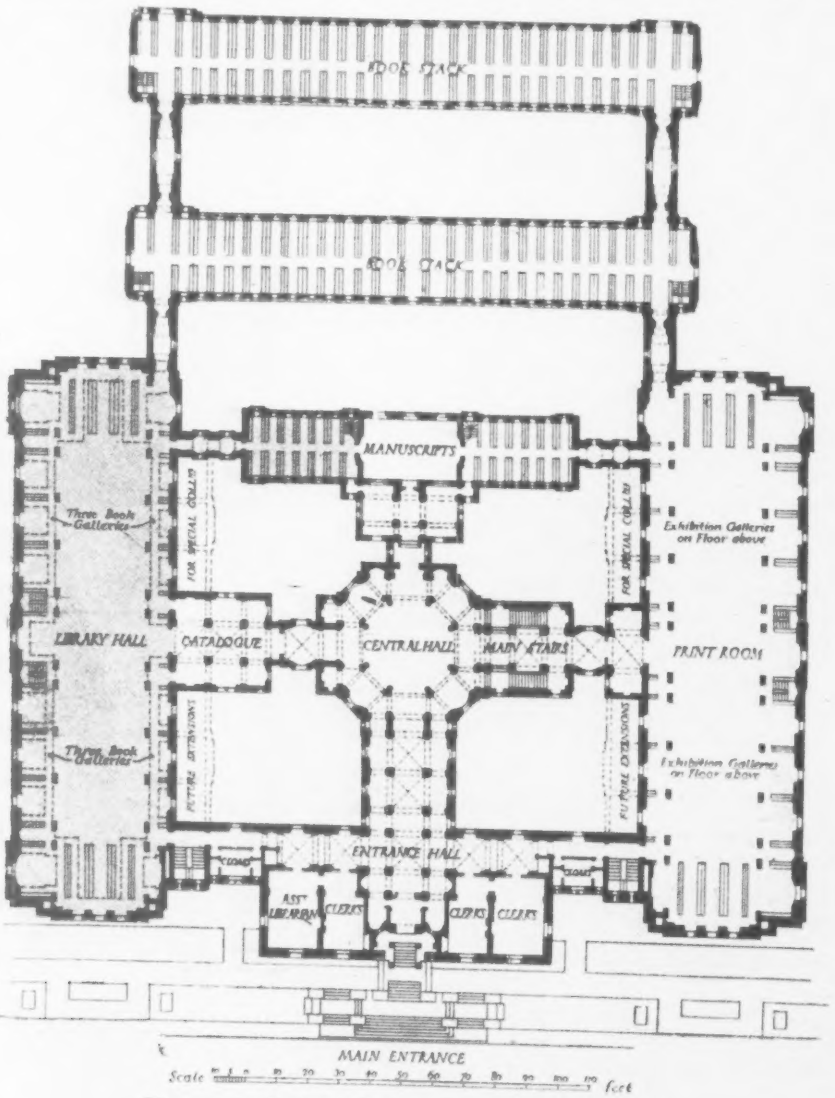
The whole of the buildings will be of fireproof construction, and to secure the utmost safety the heating and lighting plant will be in a detached building, together with workshops, a book bindery, and a small printing office, for printing catalogue cards, etc. The caretaker's residence will also be a separate building.

It is necessary for the proper safeguarding of the building and its contents that a responsible officer should always be in residence close by, and a house for the librarian will be erected on the south-east side, detached from the main building. The other building shown by the architect in the group of buildings is a suggested memorial or lecture hall. This, however, is not at present included in the scheme of buildings.

The total cost of the whole scheme of buildings, terraces, and roads, including a sum of 30,000*l.* for the provision of the book-stacks when required, is estimated to be from 150,000*l.* to 200,000*l.*, of which it is proposed to spend from 75,000*l.* to 100,000*l.* as quickly as possible in order to provide for the immediate and pressing needs of the library, and a first contract has already been let, and the work commenced for the erection of the library hall and a part of the MSS. department, involving, with certain supplementary work for roads, architects' and surveyors' fees, legal and other expenses, and the provision of the necessary fittings, bookcases, and furniture, which are not included in the contract for the buildings, an expenditure of about 45,000*l.*

Nearly two years have elapsed since the design for the National Library was selected by Professor Reginald Blomfield, A.R.A. Since then much time has been spent on the study and development of the scheme. Illustrations of Mr. Greenslade's original design appeared in our issue for June 19, 1909. Although nothing has been altered in regard to the principle of the plan, yet the scheme as adopted is a very much larger one than was dreamed of at first.

In the competition design the total length of the main frontage line was only about 200·0 ft.—it is now 265·0 ft., with a depth of 300·0 ft. to the back of the second stack, and the same proportional increase has been maintained everywhere. Fortunately, through the generosity of the Right Hon. Lord Rendel, the sill has been practically doubled in extent. The whole frontage from the domed block on the extreme left to the proposed Memorial Hall on the extreme right will be nearly 750·0 ft.



Plan of the National Library of Wales, Aberystwyth.
Mr. Sidney K. Greenslade, A.R.I.B.A., Architect.

The whole of the central portion of the block with the quadrangle in the original plan was kept on the level of the ground floor only. Now it covers the whole of the upper floor also, thus giving much greater accommodation, and helping architecturally the dignity of the design.

The handle of the trowel used in laying the foundation-stone of the building is of carved ivory with mouldings of silver let into grooves in the surface, into which also Tudor roses of crimson translucent enamel over fine gold are set between groups of gold rivets; it is mounted at the upper end with a silver crown of vine foliage and stems, with a band of silver moulding enriched with rubies and surmounted by an amethyst globe; it is connected with the silver stem by a band of silver set with rubies. On the blade, which has a thickened edge, there is a wreath of oak leaves and acorns each separately repoussèd, and silver soldered to the stem. In the centre of the wreath is a circular panel with the legend engraved in Georgian script, and this is bordered by a composite twisting of gold and silver wires set with emeralds, cabochon cut. The shoulder of the blade has a chased border of rose leaves and flowers above a carved Welsh inscription.

Designed by Mr. Edward Spencer, of the Artificers' Guild, Conduit-street, the work was executed at the Chiswick workshops of the Guild in British-grove by Messrs. Frank Jobe, W. Glennie, A. Minns, craftsmen of the Guild.

The woodwork is by Mr. Romney Green.

The Queen's trowel is of similar design, but the ivory handle has wreaths of may blossom and leaves in enamel and silver. Above the large wreath of alternate oak leaves and may blossom are two circular panels of hawthorn in silver and enamel surmounted by cabochon chalcedonies.

The level is of English walnut bound with silver moundings and twists surmounted by a silver dome raised on four ivory columns with twisted gold wire let into their surface in vertical channels. From the dome hangs a plummet of green and white enamel which checks the action of a small spirit level enclosed with the silverwork of the base. Above the dome silver rose foliage set with amethysts and green agates encloses a panel with the Royal monograms surmounted by a silver crown.

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The cases are of grey Morocco leather with the Royal monogram in the centre surrounded by bowderings of crowns and small monograms, lined with mouse-coloured velvet and oyster white silk.

Royal Academy Schools: Design for St. Paul's Bridge, etc.

THE conditions of the above subject were that a new road should be constructed continuing that at the east end of St. Paul's Cathedral, passing over Queen Victoria-street and Thames-street, and crossing the river by means of a new bridge at a given point east of St. Paul's Wharf.

The design deals only with the bridge and approaches.

It is suggested that the new road should widen at the approach to the bridge, forming a small "place" surrounded by office buildings in connexion with the adjacent wharves.

The northern approach is so designed that a good view of the dome of St. Paul's might be obtained from the bridge, with the pylons and their bronze groups, etc., forming a setting.

The ornament throughout has been made appropriate to the subject and its position, the cutwaters being suggestive of the prows of ancient galleys, and the bronze lamps over decorated with dolphins, etc.

The bridge is given only sufficient camber to obviate any appearance of sagging, the difference of level between the north and south shores being covered by the parapets.

L. H. BUCKNELL.

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The Glynn Vivian Art Gallery has been erected at an estimated cost of 10,000*l.* from the designs of Mr. Glendinning Moxham, F.R.I.B.A., architect, of Swansea. The builders were Messrs. Lloyd Bros., of Swansea, and the carving was executed by Mr. G. Houghton, of Worcester.

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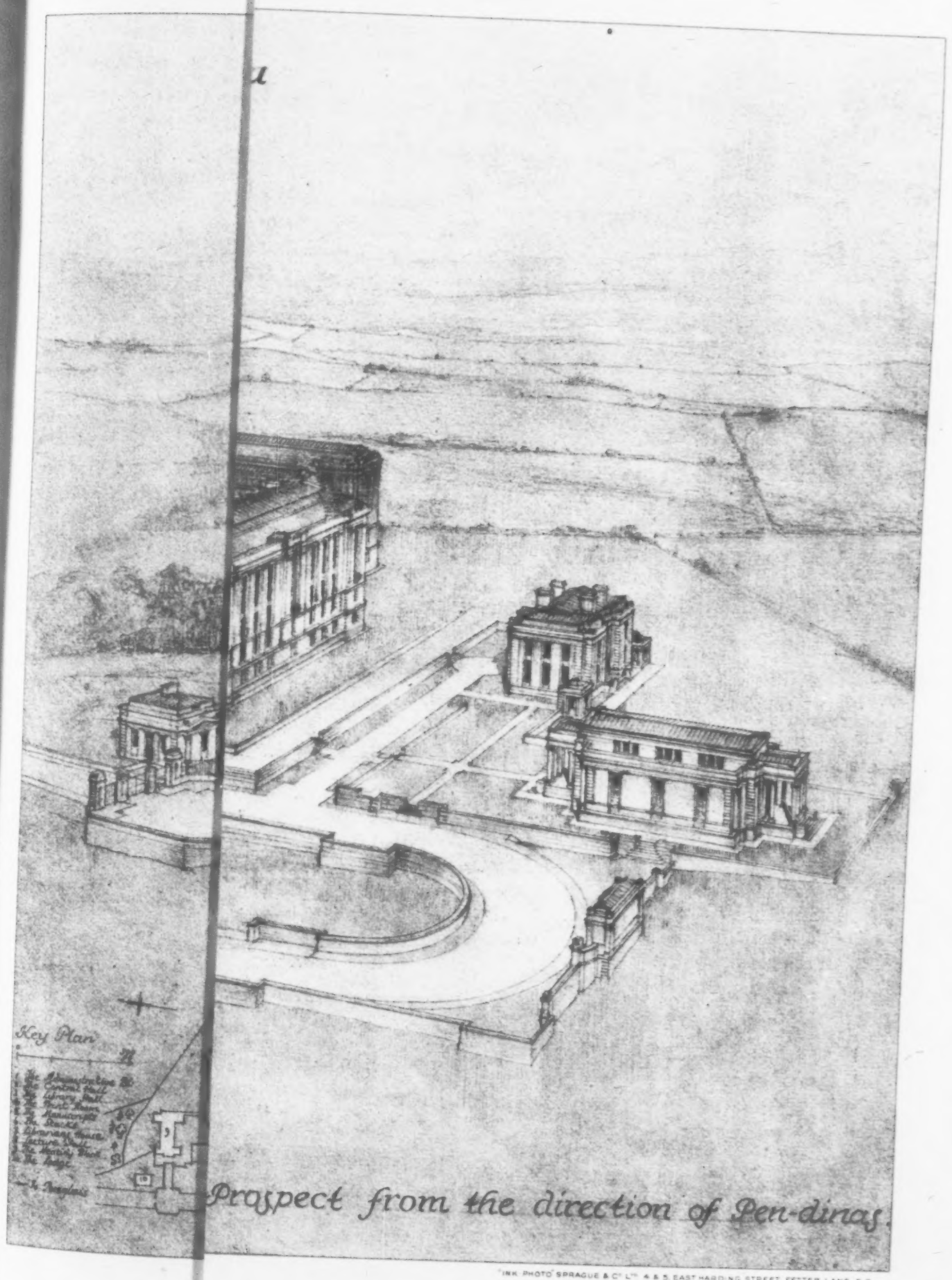

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R.I.B.A., ARCHITECT.

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The whole of the central portion of the block with the quadrangle in the original plan was kept on the level of the ground floor only. Now it covers the whole of the upper floor also, thus giving much greater accommodation, and helping architecturally the dignity of the design.

The handle of the trowel used in laying the foundation-stone of the building is of carved ivory with mouldings of silver let into grooves in the surface, into which also Tudor roses of crimson translucent enamel over fine gold are set between groups of gold rivets; it is mounted at the upper end with a silver crown of vine foliage and stems, with a band of silver moulding enriched with rubies and surmounted by an amethyst globe; it is connected with the silver stem by a band of silver set with rubies. On the blade, which has a thickened edge, there is a wreath of oak leaves and acorns each separately repoussé, and silver soldered to the stem. In the centre of the wreath is a circular panel with the legend engraved in Georgian script, and this is bordered by a composite twisting of gold and silver wires set with emeralds, cabochon cut. The shoulder of the blade has a chased border of rose leaves and flowers above a carved Welsh inscription.

Designed by Mr. Edward Spencer, of the Artificers' Guild, Conduit-street, the work was executed at the Chiswick workshops of the Guild in British-grove by Messrs. Frank Jobe, W. Glennie, A. Minns, craftsmen of the Guild.

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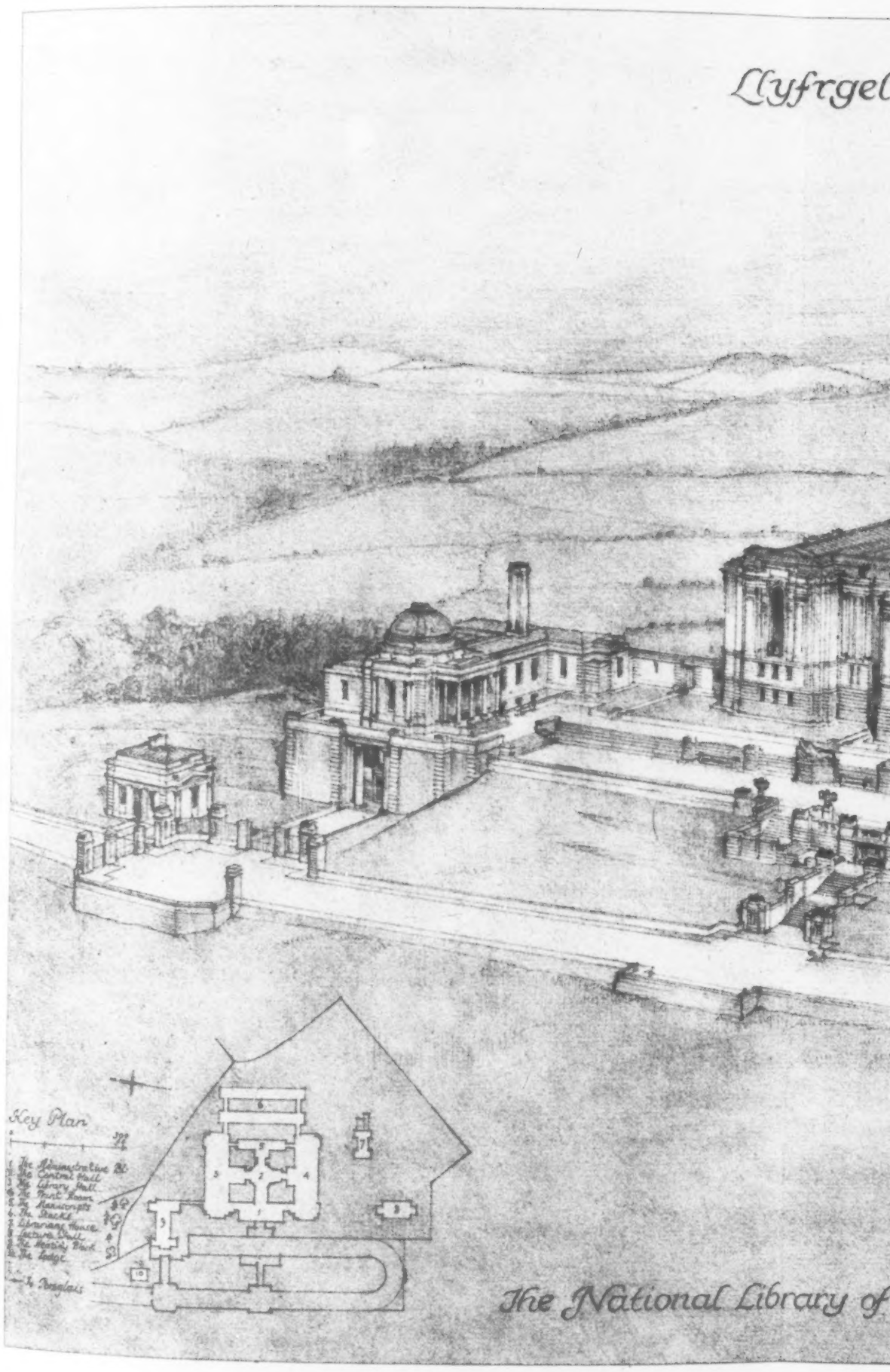

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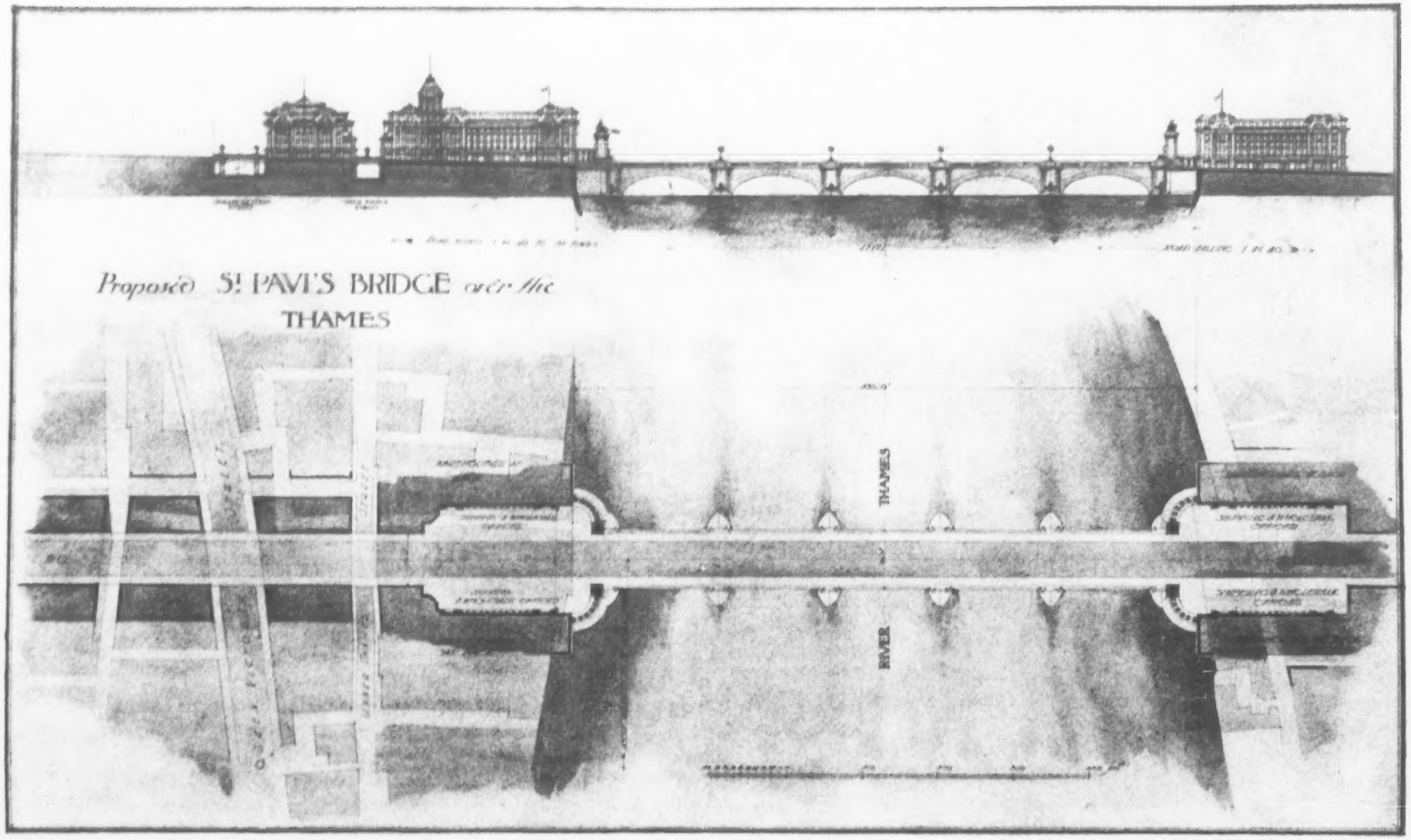

R A SCHOOLS DESIGN IN ARCHITECTURE: AWARDED £25 PRIZE.—By Mr Leonard H Bucknell

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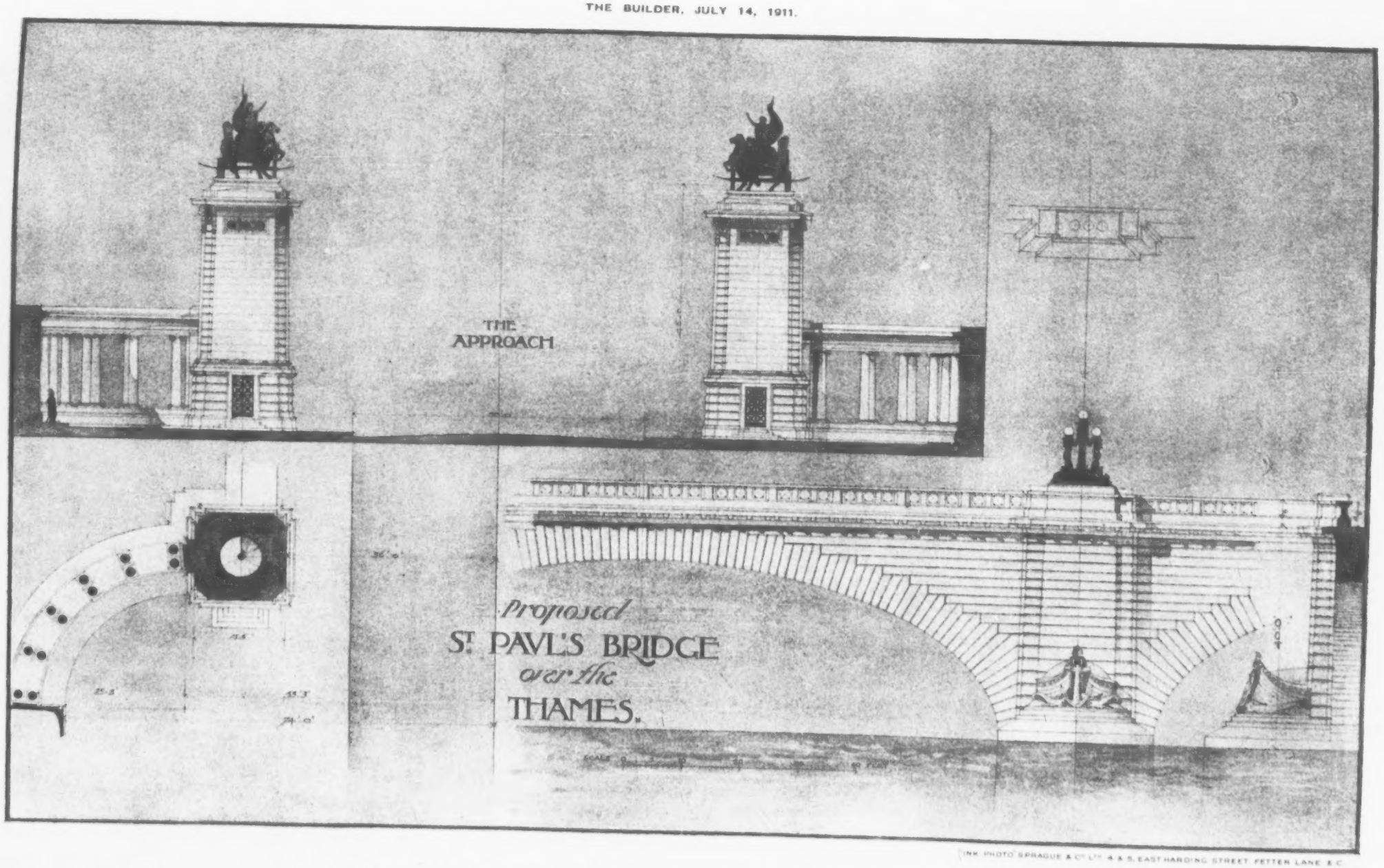

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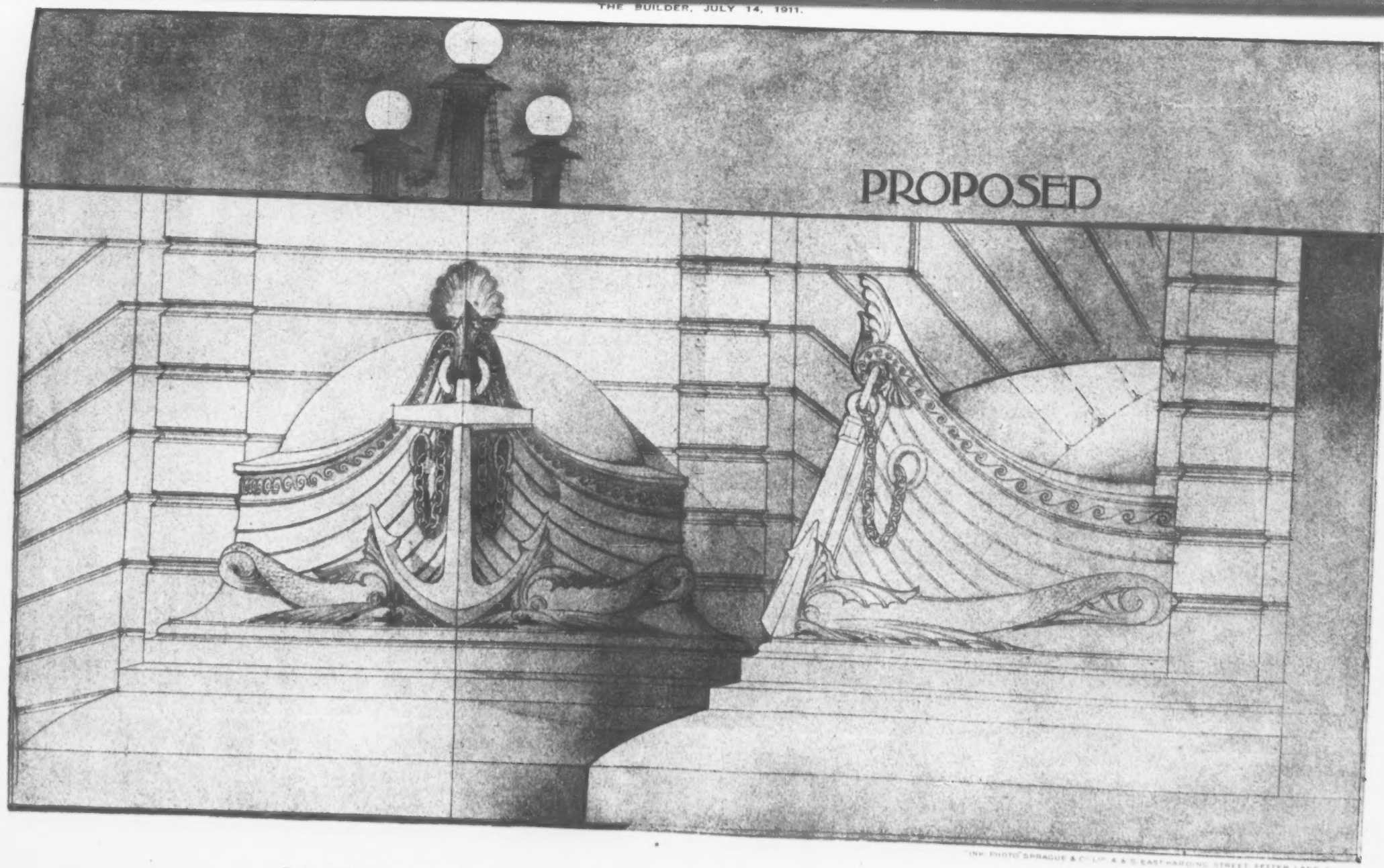

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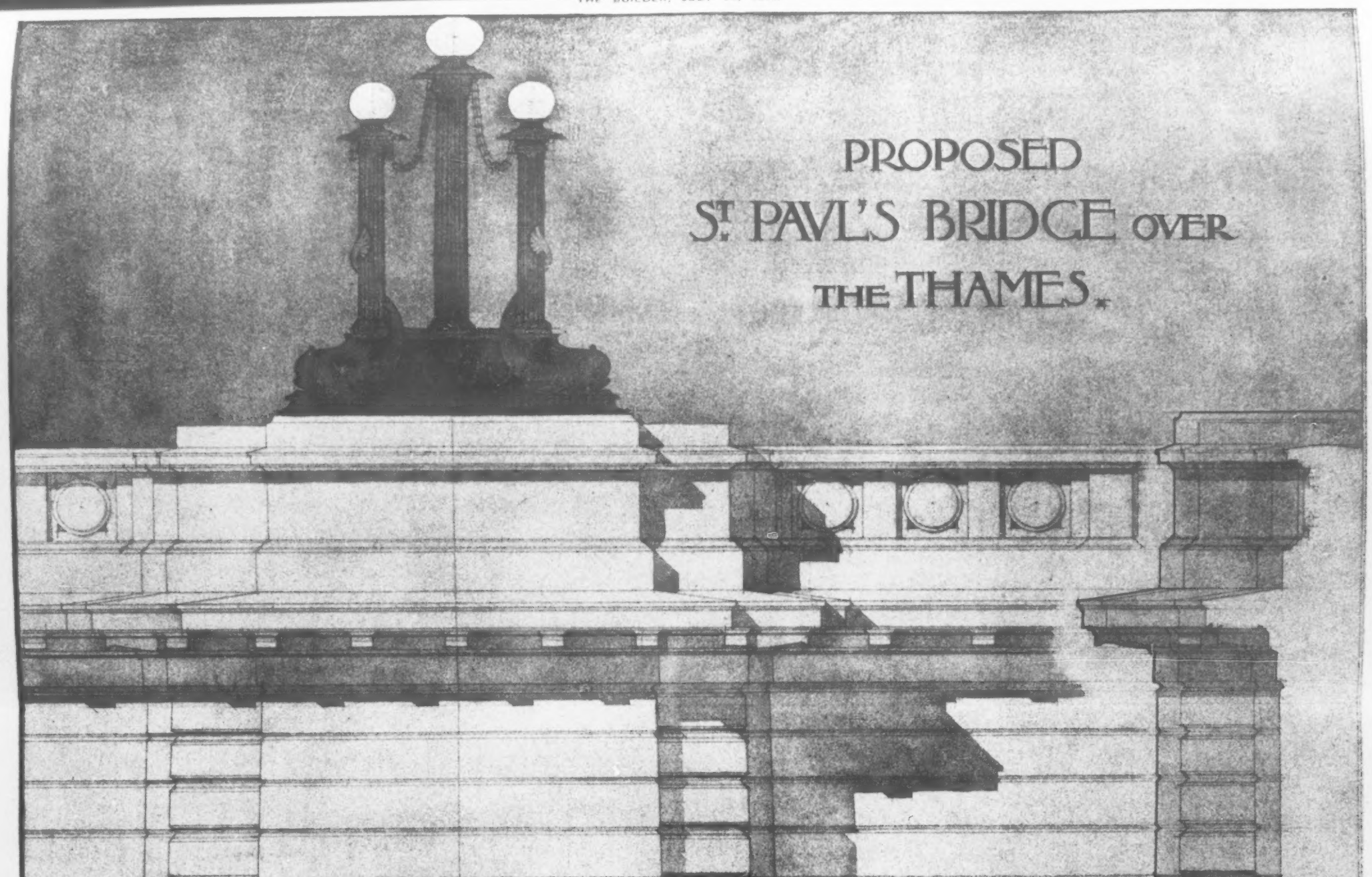
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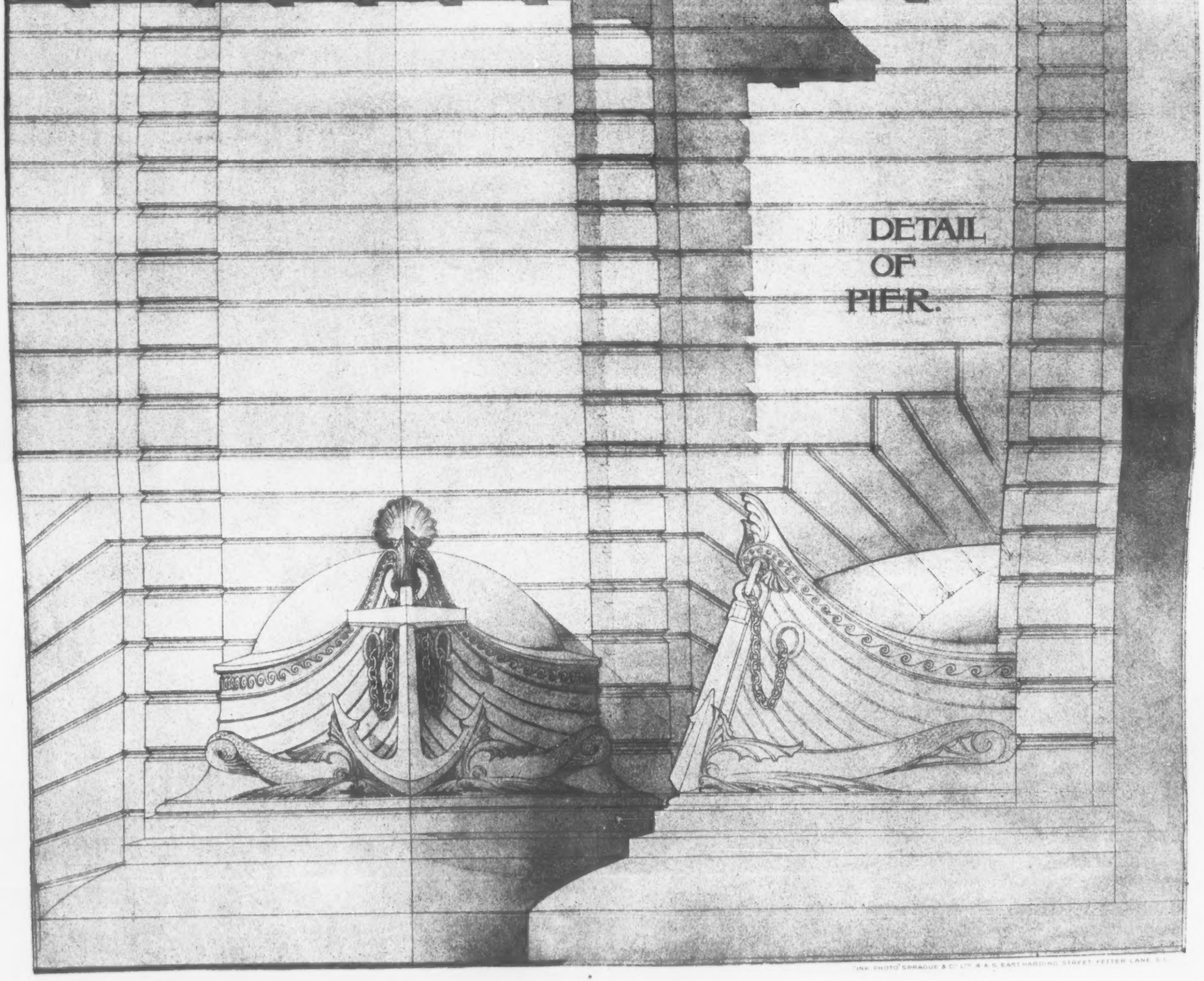

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MONTHLY REVIEW · *of* · CONSTRUCTION

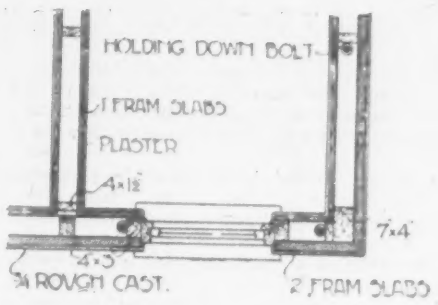
NORTH SURREY DISTRICT SCHOOLS, ANERLEY.

THE new school recently opened at Anerley by the managers of the North Surrey District Schools presents some novel features of construction.

For instance, its walls, both external and internal, are formed by concrete slabs 2½ in. in thickness and about 1 ft. 9 in. by 1 ft. 5 in. in size, dovetailed into each other, grouted with Portland cement, and supported by horizontal channels and steel uprights.

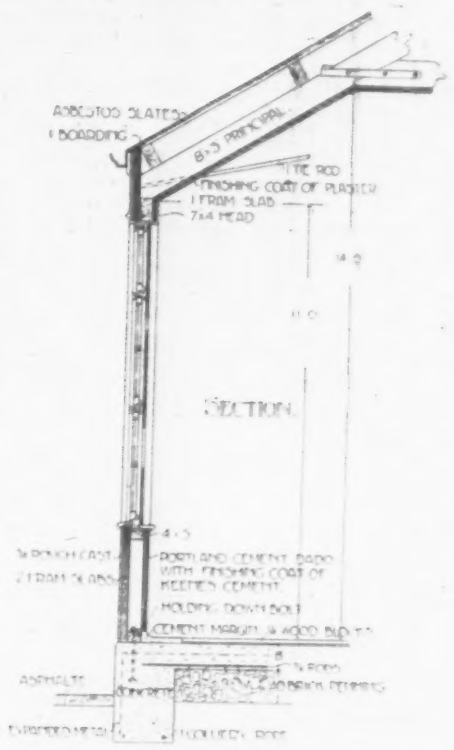
Externally the walling is finished with Portland cement rendering, ¾ in. thick, and internally the surfaces of all walls and ceilings are covered with expanded metal lathing and coated with marble plaster.

The building work was executed with remarkable rapidity, the whole structure, including the boiler-house, drainage, and

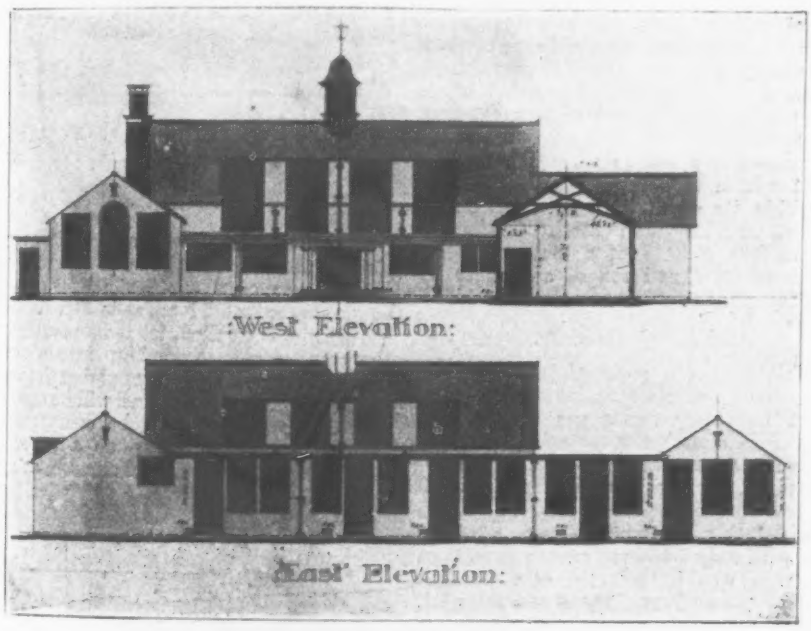


PLAN.

North Surrey District Schools, Anerley.
Fig. 1. Detail of Construction.



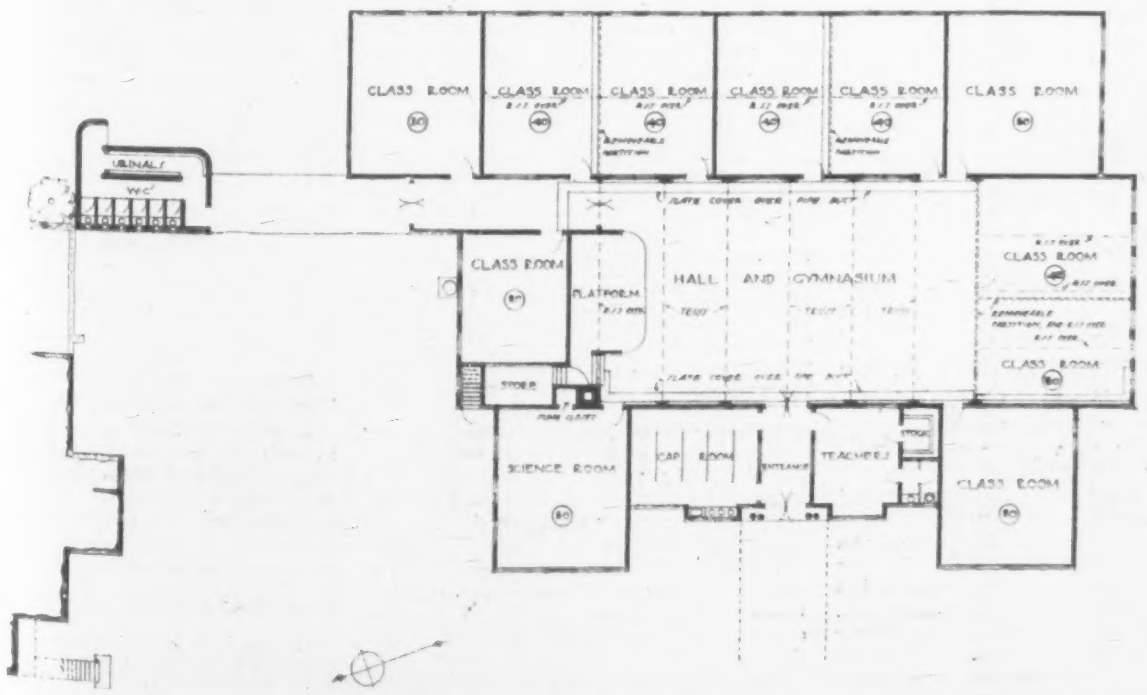
North Surrey District Schools, Anerley.
Fig. 2. Detail of Construction.



North Surrey District Schools, Anerley.

the installation of the hot-water system of heating, being erected and completed ready for occupation within fifteen weeks. The method of construction was as follows, viz.:—A concrete raft, 6 in. in thickness, was placed over the whole of the site covered by the building, and the positions of all walls set out by steel channels and angles. The vertical supports of the walling and the steel stanchions carrying the main roof trusses over the gymnasium, spaced 10 ft. apart, were then fixed, and roof plates bolted to the uprights to receive the roof timbers.

The surface of the concrete raft being above the level of the surrounding ground,



North Surrey District Schools, Anerley.
Mr. Cecil A. Sharp, A.R.I.B.A., Architect.

neither footings nor dampproof courses were required, but the thickness of the concrete was increased to 2 ft. under the main stanchions and at the junction of all walls.

To all appearance the structure, which is perfectly rigid and absolutely waterproof and soundproof, is an excellent example of the successful application of a novel method of construction to a school building of the usual type of design.

Exclusive of its assembly hall and gymnasium, the school contains seating accommodation in its eleven well-lighted classrooms for 450 boys, and the subsidiary rooms, such as the teachers' room, cloak-room, etc., are spacious and well arranged.

This school building was the subject of a competition, instituted by the managers of the North Surrey District Schools, in which the design submitted by Mr. Cecil A. Sharp, A.R.I.B.A., of 11, Old Queen-street, Westminster, was selected for execution, and the work has been carried out under his superintendence.

Fig. 1 of the accompanying constructional details shows the angle treatment of the concrete slabs, Fig. 2 the eaves, windows, etc, and the concrete raft and floor.

NOTES ON SOME DEFINITIONS USED IN STRUCTURAL MECHANICS—(*Continued*).

By PERCY J. WALDRAM, F.S.I.

MODULUS OF ELASTICITY AND DEFLECTION.

THE practical designer wishing to understand the important subject of deflection is met in nearly all text-books with the statement that the subject is beyond his intelligence, and that he must trust blindly to the formulæ and rules supplied to him. As these formulæ usually involve the calculation of Moments of Inertia, he seldom uses these, and, therefore, probably fails to note the small mathematical differences in them which indicate that the *stiffness* of a beam or cantilever bears little or no relation to its *strength*. Failure to appreciate the importance of the essential factors regulating stiffness frequently leads, on the one hand, to undue confidence in the strength of a beam or member which proves to be stiff under its load, or, on the other hand, it may lead to unexpected and disfiguring deflections occurring in members whose strength may have been quite correctly predetermined.

If the factors governing deflection be investigated with a little care and a very little common sense, the subject will be found to be no more difficult than the mechanics of a child's seesaw.

It is well known that the strength of a girder or cantilever varies directly according to its fibre strength (f) multiplied by its muscular development or section modulus Z (which is roughly its effective flange area $\times$ its effective depth, or ad), whilst its length (l) directly decreases its strength, or

$$\text{Strength} \propto \frac{ad}{l} \times f,$$

and in the case of beams of rectangular section whose flange area (a) is always $\frac{bd}{4}$, and whose effective depth is always $\frac{2}{3}d$, then

$$\text{Strength} \propto \frac{bd}{4} \times \frac{2d}{3} \times \frac{f}{l} = \frac{bd^2}{6} \times \frac{f}{l}.$$

The deflection of a girder or cantilever being merely the result of the "give" of the flange fibres under stress, one would expect the stiffness to vary, like the strength, with the flange area, effective depth, and length. It certainly does vary with the flange area, *i.e.*, with the flange stress, but the depth and length affect it very differently.

If the flange stress in a girder or cantilever be reduced by halving the load, the deflection will be accordingly reduced by one-half, as would be expected. But if the flange stress be reduced to one-half by halving the span, the deflection ($\triangle$) will be reduced to only $\frac{1}{8}$ of its previous amount instead of $\frac{1}{2}$, and generally the deflection varies, not with the span, but with the cube of the span, or $\triangle \propto l^3$.

Similarly, if the flange stress be reduced by doubling the flange area, the deflection is halved, but if the flange stress be reduced by doubling the depth, then the deflection will be reduced not to $\frac{1}{2}$ but to $\frac{1}{4}$, the deflection varying inversely with the square of the depth, or $\triangle \propto \frac{l^3}{d^2}$; and in girders of rectangular section, where doubling the depth also doubles the effective flange area $\left(\frac{bd}{4}\right)$, then the deflection would be reduced to $\frac{1}{8}$, viz., as $\frac{l^3}{d^3}$.

Still more strange is the want of connexion between the stiffness of a beam and the fibre strength (f) of its material. One would expect, for instance, a beam of oak or teak to be much stiffer than a beam of deal, whereas the exact reverse is the case—a beam of oak or teak, which will carry a distinctly heavier load than a beam of deal of the same size and span will always deflect more under the same load. A cast-iron beam is far weaker than a steel or wrought-iron beam of the same size, but all three would be of practically the same stiffness when stressed within the elastic limit. Concrete also within its small limit of elasticity is far *more* flexible than steel. Obviously, therefore, the rigidity of a material is no criterion of its fibre strength and must be separately studied.

Modulus of Elasticity.

The rigidity of a material is defined by what is known as its modulus of elasticity (E), an imaginary stress per square inch which would stretch the material to double its length or compress to annihilation; as, for instance, an imaginary stress of 13,000 tons per square inch for mild steel. If, instead of this imaginary stress, steel be loaded with only 1 ton per square inch, then the stretch would be $\frac{1}{13,000}$ of the length of the bar operated on. The E of a material, therefore, represents not only an imaginary stress, it also represents that proportion of the length of a stressed bar which it will stretch or compress under a stress of 1 ton per square inch. All deformations *within the elastic limit* can be easily deduced from this, and what takes place outside the elastic limit is of no practical consequence.

If the length of any bar be divided by the modulus of elasticity of its material, the stretch under a stress of 1 ton per square inch is obtained; and the stretch under any greater stress, such as 5 or 10 tons per square inch, is the same result multiplied by 5 or 10, as the case may be.

If a steel bar 13 ft. long were subjected to a stress of 1 ton per square inch it would elongate or shorten, as the case may be, to the extent of $\frac{13'\ 0''}{13,000}$, or $\frac{1}{1000}$ of a foot. If it were loaded to the extent of 10 tons per square inch, the deformation would be ten times that amount, or $\frac{1}{100}$ of a foot. On the other hand, if the bar were 26 ft. long, the extension or compression under a load of 1 ton per square inch would be $\frac{26'\ 0''}{13,000}$, or $\frac{1}{500}$ of a foot; and if the load imposed a stress of 10 tons per square inch the compression or stretching would be $\frac{1}{50}$ of a foot. The greater the stress the greater the deformation under that stress, and also the longer the bar the greater will be the total deformation. If a piece of elastic 6 in. long stretches to the extent of 1 in. under a load of 1 lb., then a piece 12 in. long would stretch to the extent of 2 in., and a yard of the same elastic under the same load would stretch to 3 ft. 6 in.

The term modulus of elasticity is an unfortunate one. It is not a measure of the elasticity of a material, which is its power of recovering its original dimensions after the removal of any stress, nor is it a measure of its ductility—it is a measure of its *stiffness*.

If the moduli of different materials as given in Molesworth or any good text-book be compared, it will be found that they vary in quite a different manner to their respective *strengths*.

Deal has a higher modulus than oak, teak, greenheart, or any hard wood. Concrete is much less than steel, whereas hard and mild steels and cast-iron, which are widely different in strength, differ but little in stiffness. It is for this reason that there is but little to choose between the strengths of similar long columns of the three materials, which would all fail by bending; steel being commonly selected for such a purpose merely because it is the more reliable material.

The curvature of a girder is caused almost entirely by the stretching of one flange and the compression of the other under horizontal flange stress, the deformation of the web affecting the general curvature to such a minute degree that it may be (and in practice is) disregarded.

FIG. 1

The effect of such stretching and compression of the flanges can be most clearly seen in the case of a cantilever loaded with a single concentrated load, as in Fig. 1. Before the weight is applied, let it be assumed that the cantilever is divided up into a number of regular panels. Upon applying the weight, the upper part of each panel will be stretched, and the lower part will be compressed, so that each panel will assume a taper form resembling the voussoirs of an arch, as shown in Fig. 2.

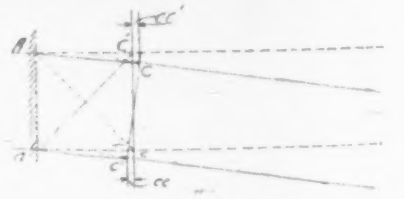


FIG 2

The alteration in the length of a flange would be its length $\div$ the modulus of elasticity $\times$ the stress per square inch, *i.e.*, its stretch under a stress of 1 ton per square inch, multiplied by the stress it is actually receiving.

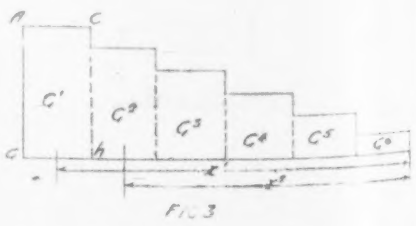


FIG 3

Let a diagram of flange stress per square inch be made as in Fig. 3, in which AG represents the flange stress per square inch in each flange of the first panel. Then the upper bar of that panel will be extended and the lower bar compressed by an amount equal to the length (AC) of the panel $\div$ the modulus of elasticity (E) $\times$ stress intensity per square inch (AG); or the alteration in length (CC' in Fig. 2) $= \frac{AC \times AG}{E}$.

Of this $AG \times AC$ will be represented by the *area* of the figure $AGhC$. If this area be called G' then $\frac{G'}{E}$ will express either the

elongation (CC') of the upper bar (Fig. 2) or the compression (cc') of the lower bar.

The altered form of the panel is shown in Fig. 2, and the *inclination* of the line Cc', which was originally vertical, will be measured by the linear extension of the upper flange ÷ half the depth of the girder, or by

$$\frac{\text{Extension of } AC + \text{compression of } ac}{\text{depth of girder}} \text{ or } \frac{2G}{Ed}.$$

Even if the rest of the girder were subject to no further stress, this tapering of the first voussoir would have the effect of setting up a gradient of deflection, which passes along the *whole length* of the cantilever. It will be seen that the longer the cantilever the greater will be the droop or deflection between the first panel and the end, due to that initial gradient or slope set up in the first panel. Also that the depth of the girder is one of the two essential factors which determine this initial gradient. If the extension CC and the compression cc were exercised in a deeper girder or cantilever the initial gradient of the first panel or voussoir would be obviously less severe than if they were exercised in a shallow girder. This fact is very important and merits some attention. Fig. 3A shows

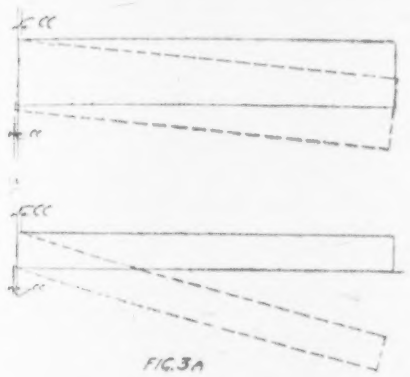


FIG 3A

two cantilevers of the same span and carrying loads which result in the same flange stress, and, therefore, the same stretch of the flange fibres CC. Yet if the deflection of the deeper cantilever were considered reasonable, then that of a shallow cantilever would appear to be excessive to a startling degree. A small deflection does not, therefore, necessarily indicate moderate flange stresses and safety, any more than a large deflection necessarily indicates danger. In a short, deep girder or cantilever which deflects ½ in. under its load, the fibres are possibly being punished to a far greater degree than those in a longer and shallower one which deflects 2 in. Deflection *per se* is no criterion of safety or danger unless it be considered in its proper relation to length and depth. Cases have been known where bridges which showed quite a small and satisfactory deflection under a test live load of locomotives were really so distressed by that load that they soon afterwards quietly collapsed under the load of their own weight.

Although the deflection of a cantilever is the result of the stretching of one flange and the compressing of the other, its amount is also affected by the depth, which determines the initial gradient, and by the length, which determines the effect of that gradient and also the amount of stretch.

It will now be clear why the depth of a girder has a greater effect in reducing deflection than it has in reducing flange stress. In reducing flange stress in a rectangular girder it acts twice over, first by increasing the area of the flange, and secondly by increasing the leverage at which that area acts, viz., $d \times d$ or d^2. In reducing the deflection it acts first in that double fashion, in determining the flange stress, and then exerts its influence again in determining the initial gradient, and so acts as $d^2 \times d$ or d^3, instead of d. Or in the case of thin webbed girders, where it exerts no influence in the *area* of the flange, it acts as $d \times d$ or d^2 instead of d. The length also of a bended cantilever or girder, which has previously used its influence as *leverage* in setting up flange stress, acts over again with regard to deflection by multiplying the initial gradient and operating, therefore, to increase the deflection as $l \times l$ or l^2. It has, however, a further influence, because if we consider the remaining panels we find that each panel has its own particular flange stress which, in its turn, has to be multiplied by the length of each panel, and sets up a further gradient, which contributes a further quota to the total deflection. So that the length acts over again in the same way that a 6-in. stretch takes place in a yard of loaded elastic as compared to 2 in. in a foot similarly loaded. The length, therefore, operates to increase deflection, first as leverage by increasing the flange stress, then to enhance at the end the camber of every voussoir, and then also by collecting the different stretches of every voussoir or panel under stress. So that, whilst it only acts as l to enhance the flange-stress, it acts as $l \times l \times l$ or l^3 to enhance the deflection.

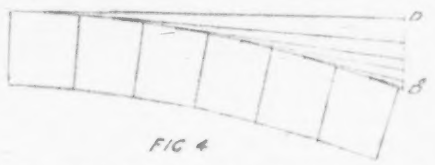


FIG 4

The total deflection DD^3 in Fig. 4 is, of course, the sum of all the deflections, each one of which is equal to the area of the stress diagram of each panel ÷ Ed and multiplied by its distance from B, and the total deflection DD^3 *is equal to the area of the whole diagram* × *the distance of its c.g.* ÷ Ed. This gives the key to the whole problem of deflection of any parallel girder. All we have to do is to imagine the diagram of flange stress in either flange per square inch as a load, and its moment about the point of deflection (in this case B) will represent the deflection due to it—as there are two flanges, and both are deforming under the stress, this must, of course, be multiplied by 2.

If, therefore, G represents the entire area of the diagram, and X the distance of its *c.g.* from B, the deflection will be $= \frac{2GX}{ED}$.

In the next instalment this simple solution will be applied to different classes of girders and cantilevers, with precisely the same results as are obtained by most obscure mathematical processes.

EXHIBITION BUILDINGS.—VI.: EXAMPLES AT THE FRANCO-BRITISH EXHIBITION.

TAKEN as a whole, the numerous buildings erected for the Franco-British Exhibition in 1908, and with one or two exceptions still to be found at Shepherd's Bush, cannot be regarded as ideal structures from the standpoint of fire-resistance. The reassuring fact that no outbreak of fire has occurred at any of the exhibitions held on the site may be taken as evidence of prudent administration and the safeguards adopted by the responsible authorities.

Some of the buildings include more or less fragmentary examples of fire-resisting construction, chiefly in the form of flooring and partitions. The reinforced concrete platforms in the Stadium have already been mentioned in a preceding article, and among other fire-resisting floors we may cite those constructed by the Armoured Tubular Flooring Company in the Picture Galleries, the Soap Milling Hall, the Restaurant, and the tower in the Irish Village.

The pavilions and halls at present to be seen on the site represent either steel or timber framework faced with plaster, and therefore little or no better than the average exhibition building, although in some important respects superior to those which came to an untimely end in the Brussels conflagration.

A structure illustrating the principle of articulated, as distinguished from monolithic, reinforced concrete construction was the bakery erected at the Franco-British Exhibition by Messrs. D. G. Somerville & Co., and at present forming part of the manufactory of Messrs. McVitie & Price, at Willesden.

This building, originally occupying a site at the corner of the Grand Avenue of the Colonies and Empire Avenue, was dismantled at the conclusion of the Exhibition and transported in parts to its present situation. By adopting this type of building the firm were able to secure perfectly safe as well as convenient and substantial accommodation for their exhibit, and to avoid the loss of money consequent on the demolition of an ordinary exhibition building, and the sale of materials at merely nominal prices. The building, as erected at Shepherd's Bush, was founded on a reinforced concrete raft 6 in. thick, with concrete bases under and enclosing the lower part of the steel columns. This type of foundation was employed because the unstable nature of the ground would have involved serious risk of unequal settlement if ordinary footing had been adopted. It is true that the requisite degree of security might have been attained by pile foundations, or by carrying down piers to the underlying clay. But after due consideration it was decided that the reinforced concrete raft would be quite as satisfactory and at the same time far less costly than any alternative form of foundation works.

The surface of the foundation slab, finished with a layer of cement, formed a perfectly fire-resisting floor for the exhibition building, which consisted of a light steel frame with enclosing wall panels and interior partitions in reinforced concrete, the walls being only 3 in. thick.

The main tower was also cased in reinforced concrete, the outer surfaces of the building having been rendered in cement mortar and finished in rough-cast.

The roof principals were of steel, the framing having timber purlins and rafters covered with tiles. All the steelwork was completely protected, the general character of the building and its contents being such as to render very unlikely any serious outbreak of fire.

Messrs. Somerville & Co. deserve credit for the ingenious design of this building, which clearly merits notice as a first step in the direction of fire-resisting construction of exhibition buildings on a practical and economical basis.

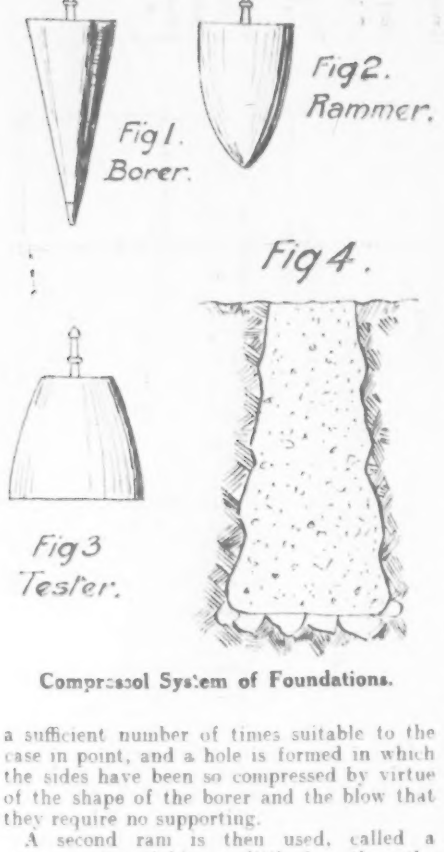
THE COMPRESSOL SYSTEM OF FOUNDATIONS.

THE extensive use of concrete during recent years has caused engineers to turn their attention to rapid and inexpensive methods whereby it can be readily applied to a large variety of cases. Especially so is the various methods adopted for the formation of footings, whether it be applied in the reinforced form as a substitute for wooden piles or simply as concrete *en masse*.

On the Continent many innovations have been introduced, and one of them is the Compressol system of piling, or what might be considered as such, introduced several years ago by Mr. S. L. Dulac, a French engineer. The word "Compressol" is used to indicate the system, which is really a compressing of the soil by rams let fall a considerable distance, which on striking the ground cause a compression of the soil struck and leaves a hole for the insertion of the concrete as a foundation.

An arrangement similar to the ordinary pile-driver is used, excepting that the ram does not lose power by the friction of guides. These are absent, and the ram falls on release clear to the ground. The rams employed are of three types, and are shown in Figs. 1 to 3. The first, which is called the "borer," is of conical shape, having a pointed end containing a cavity. This cavity is to receive a sample of the earth penetrated, and when the borer is withdrawn can be inspected at each stroke.

The weight of this borer is about 32 cwt., being 6 ft. long and 2 ft. 4 in. at its upper diameter. The height through which the borer is allowed to fall varies with the soil and circumstances of the case, sometimes being over 30 ft. The rammer is lifted by means of a special automatic gripper which engages with the nipple-shaped head; a special ring attached to the driving-machine frame engages with the automatic grip and releases the ram. The borer is allowed to fall



Compressol System of Foundations.

a sufficient number of times suitable to the case in point, and a hole is formed in which the sides have been so compressed by virtue of the shape of the borer and the blow that they require no supporting.

A second ram is then used, called a "rammer," weighing a little less than the borer, being 3 ft. long and 2 ft. 2 in. largest diameter, of the shape shown in Fig. 2. The rammer is employed to drive several large stones which have been thrown into the pit after the use of the borer has been discontinued, and besides driving them to a firm bed, it forces them outwards and enlarges the base.

When these stones have been forced into position the hole is filled with concrete in layers about 18 in. thick, and a third ram, called a "tester," is employed to properly bed the concrete and spread it so that it properly fills in the pit. The tester is the heavier of the three, weighing about 1 ton, and, unlike the other two, which are dropped point downwards, it falls with the flat face undermost. The shape of the tester can be seen in Fig. 3, and its diameter is a little larger than that of the borer. A few blows from the tester only are required to complete the operation.

The result is a foundation somewhat of the shape shown in Fig. 4, the base, it will be seen, being larger than any other section.

From the information obtained of the set under the blow of the tester the value of the bearing power of the concrete pile is obtained. Suppose the weight of 1 ton falls 20 ft. and the pile is driven ½ in. under the blow. The energy in the tester when it strikes the pile is 20 × 1 ton, or 20 ton ft. As the pile is only driven ½ in., then it would take twenty-four times the weight of the tester to drive it 1 ft., or the bearing power of the pile is 20 × 24 = 480 tons. Deductions must be made for vibration, etc., and a factor of safety allowed before the working load on the pile is obtained.

As a great number of buildings have been erected upon foundations made in this way, there is no reason to doubt its efficacy, and as there is a saving in excavation alone it might prove a considerable saving upon ordinary methods of forming foundations where it could conveniently be employed.

CONSTRUCTION NOTES.

Cork Paving Bricks. A SANITARY, non-absorbent, and relatively noiseless material suitable for carriage drives, courtyards, and other places has recently been patented in the United States under the name of cork brick. It consists of finely-granulated cork mixed with asphalt and pressed into the form of bricks, measuring 9 in. by 4 in. by 2 in. The bricks are laid flat on any level foundation. Where laid on concrete the foundation should first be covered with a thin layer of hot asphalt or a bed of sand. If the foundation consists of broken stone a layer of sand should be spread before placing the bricks, and where laid on wood the surface should be covered with hot asphalt. It is stated that the bricks absorb less than 1½ per cent. of water by immersion, and that they afford an excellent foothold whether wet or dry.

Influence of Size in Timber Tests. REFERENCE to data given in most text-books shows that values for the ultimate strength of timber vary considerably among themselves, and are also much higher than the values ascertained by modern investigations. The chief reason for the abnormally high values so generally quoted is to be found in the fact that test pieces of small size were used, thereby reducing very largely the influence of defects which are inseparable from specimens of large size.

At the International Engineering Conference of 1904 Professor Lanza showed that, as compared with the ample records provided by small size timber tests, the data on large size specimens are very meagre. Among the latest tests of timber those conducted by Professor Talbot, at the University of Illinois, make very clear the danger of basing factors of safety upon values given by testing small size specimens.

His tests were conducted on timber beams measuring from 7 in. by 12 in. by 15 ft. to 8 in. by 16 in. by 15 ft., and, for the purpose of obtaining comparative data, on 3 in. by 3 in. by 40 in. beams cut from the larger specimens.

In Professor Talbot's tests the preponderance of failures in horizontal shear was very marked, and shows the importance of the shearing resistance of timber in large size specimens. The actual shearing strength developed in the beams averaged about two-thirds of the value given by blocks of the same wood measuring 6 in. by 8 in. by 12 in., and still less than values obtained by testing small pieces of selected timber.

To make clear the wide divergence between the results of large and small size tests we give the average values obtained by Professor Talbot on three varieties of American fir:—

Description of Timber.	Ultimate Bending Strength.			
	Cross-breaking Stress in Extreme Fibres.		Horizontal Shearing Stress.	
	Large Size.	Small Size.	Large Size.	Small Size.
	lb. per sq. in.	lb. per sq. in.	lb. per sq. in.	lb. per sq. in.
Longleaf pine	5,380	8,545	365	532
Shortleaf pine	4,866	.....	364	
Douglas fir	4,414	8,322	302	515

Comparison of the large and small size results in this table demonstrates the influence of size in tests of timber, and shows how unreliable are factors of safety based upon test results of the latter category.

Portuguese Marble and Limestone. THE British Consul at Lisbon reports that Portuguese marble is extensively exported to Brazil. "It is cheap and of excellent quality, and there seems to be no reason why it should not find a good market in the United Kingdom. Pure white marble deposits similar to and as good as Carrara exist in the North, but cannot be worked for want of railway communication. Red, grey, and mottled marbles and the yellowish white marble, which is used for lining houses in Portugal, are easy to obtain, as is also limestone—a compact, durable stone, readily cleaned."

Cement for Panama Canal. IN a Consular report just received at the British Foreign Office it is stated that three years ago a cement company in Pennsylvania received a United States Government contract to furnish 4,500,000 barrels of cement for the Panama Canal. A clause in the contract provided that the Canal Commission shall have the right either to increase or decrease the contract by 675,000 barrels. The company has now received notice from the Isthmian Commission that it will avail itself of the clause to increase the amount. It now appears that a very much larger quantity of cement will be needed than was originally expected, and a considerable quantity more than the original 4,500,000 barrels will be ordered. The Commission has already increased its daily order from 6,000 to 6,500 barrels, which makes a train-load of from forty to fifty trucks.

Concrete Floor Surfaces. TO OBVIATE undue wear of concrete floors and consequent dust it is desirable that the surface should consist largely of hard stone aggregate in particles of not less than ¼-in. gauge. The use of concrete with a liberal proportion of water is apt to bring small particles to the surface during the work of trowelling. If the finishing layer is applied before the main body of the concrete has hardened the thickness of ¾ in. is usually ample, but if applied after the building is practically complete the thickness should be at least 1½ in., so that the new material may be capable of standing without relying upon bond with the old work beneath. By taking care to make the final coat of durable character, a concrete floor should be free from "dusting," but in case remedial measures should become necessary one or two coats of boiled oil or treatment with sodium silicate solution will be found effective.

Reinforced Concrete Boiler Settings. UP to the present reinforced concrete has not come into general use for setting steam-boilers, although a large number of boilers have been set in this material. It should be understood, however, that the flues and other parts exposed to flame and intense heat must be lined with fire-brick in the customary manner. The concrete should always be made with hard stone not liable to fly apart or to disintegrate under the influence of heat, and the proportions should be such as to insure concrete of close and dense quality. The design of the setting necessarily varies with the type of boiler to be installed, but presents no difficulty to those accustomed to deal with reinforced concrete construction. Judging by examples already built, it appears that the first cost of a reinforced concrete boiler setting is practically the same as that of brickwork. But the ultimate saving should be an important item, as practically no maintenance charges are incurred for reinforced concrete, while, on the other hand, repairs of more or less costly nature are needed to keep brick boiler setting in good condition.

Crystalline Pigments in Paints for Wood. THE beneficial effect of crystalline pigments, such as barium sulphate, quartz silica, and asbestine, has been demonstrated experimentally and in practice. The action of the crystals in penetrating the surface and becoming attached by their corners to the fibre is of much value, and materially assists ordinary pigments in their duty. Some varieties of timber contain hardened pitch and sap, making penetration by paint very difficult, even when a volatile solvent, such as turpentine, is used. Some of the newer solvents, such as benzol, xylol, and other coal-tar products, have recently been tried experimentally with promising results. The penetrative power of these substances is high, and their price by no means prohibitive.

THE BUILDING TRADE.

SCAFFOLDING:

TELESCOPIC TOWERS AND MASTS.

ALTHOUGH not intended to take the place of ordinary scaffolds in the erection of new buildings, telescopic towers and masts can be usefully and economically employed for various operations where the construction of pole scaffolding would be disproportionately costly.

Practically all the leading firms of ladder makers supply telescopic towers built of timber and constructed very much on the principle of extension ladders. A tower of this kind when closed forms a compact nest of sections which can be raised by means of hand winch gear and steel cables, the top section being surmounted by a working platform, surrounded by guard rails, where one or two men can work in safety and comfort. Fig. 1 illustrates a six-section tower of the type made by Messrs. Heathman & Co., the base and winch being detachable, so as to facilitate transport and use in the interior of buildings

Apart from their utility as independent units, these towers can be applied in pairs for supporting a working platform affording accommodation for several men, as represented in Fig. 2, an arrangement which is

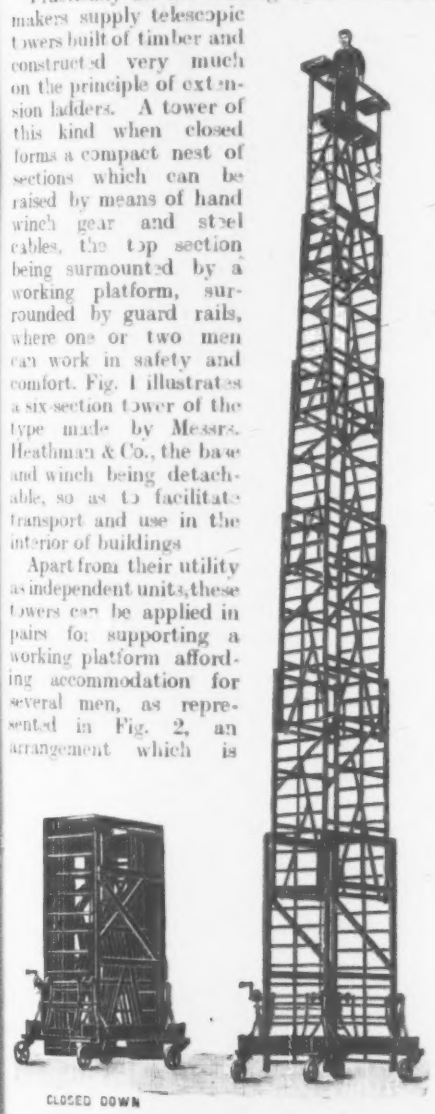


Fig. 1. Heathman's Telescopic Scaffold Tower.

convenient for pointing and decorating the exterior surface of existing buildings. They are also advantageous for the support of large platforms required in connexion with the decoration of ceilings and walls in large public halls. Where so used several towers are placed at different points, and, having been extended to the required height, serve as supports for bearers on which a temporary floor is laid, the whole forming a substantial scaffold.

A more recent type of tower constructed of steel tubes is shown in Fig. 3. This appliance, made by Palmer's Travelling Cradle and Scaffold Company, is not telescopic, but can be readily erected to any required height up to 60 ft. The base is fitted with double wheels at each corner, and the top section carries a working platform 9 ft. square protected by guard rails, which can be applied whether the tower is built up to its full height or to any lower level.

The tower can also be employed as a centre support for staging required in the decoration of ceilings and domes in large buildings, the outer edges of the staging being carried by ladder scaffolds or any convenient alternative.

The most recent variety of telescopic apparatus for scaffolding purposes, and also available as a hoist for building materials, is the "Comet" mast, introduced into this country by Mr. T. Birnbaum, of 20, Bucklersbury. Fig. 4 is a view of the mast, showing it fitted with a working platform at the top. The mast is also supplied with a winch and tackle for hoisting materials.

The mast itself consists of a series of steel tubes, of successively decreased diameter and thickness, arranged to slide telescopically, as shown in Fig. 5. Each section has a ring clamp at the top and bottom, these clamps serving the two purposes of eliminating all shaking when the mast is extended, and of preventing all but the lowest tube to descend when the mast is being closed. A collar fixed near the foot of each section acts as a stop in conjunction with the top ring clamp of the next section, so that no section can be drawn out too far.

Fig. 6 shows the device described as a tube retainer. The pin *a* is automatically pushed outward one step at a time, so that only the innermost tube is hoisted, the sections being released one after the other only after the inner tube has been completely raised. The mast here shown is of circular cross section, but it should be noted that square masts are supplied for use as hoists with a winch capable of raising 3 tons.

Fig. 7 illustrates the mechanism for raising and lowering the mast. Within the pedestal is a drum driven by gearing and a chain and a sprocket wheel from one or two crank handle shafts. Around the drum is coiled a perforated steel band, the free end of which passes between two friction rollers, one provided with teeth to fit the perforations in the band, the rollers being actuated from the handle shaft simultaneously with the drum. As may be seen by Fig. 6, the width of the band is reduced

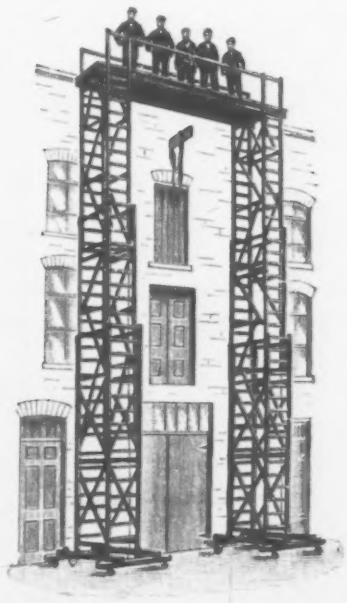


Fig. 2. Heathman's Telescopic Scaffold Tower.

progressively with the diameter of the tubes, and passes inside these as represented in Fig. 5. The band fits the interior of the tubes closely, and, being thereby prevented from buckling, is used to push up the several sections of the mast.

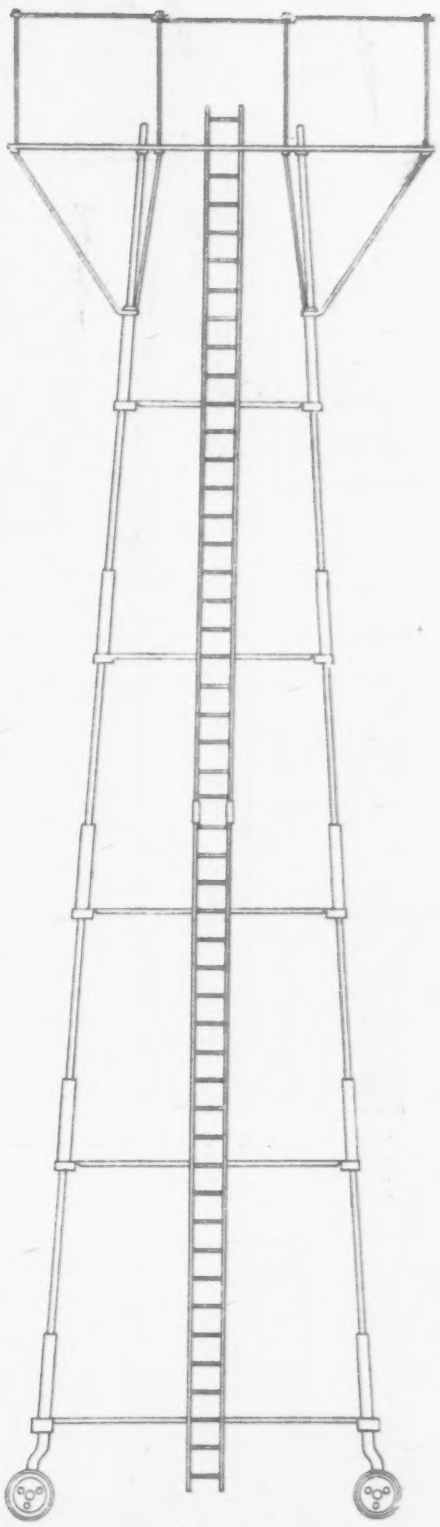


Fig. 3. Palmer's Tubular Steel Tower.

When it is desired to extend the mast the handles are turned, causing the band to unroll from the drum. The top section, attached at its foot to the end of the band, is the first to rise, the others following in succession as they are automatically released by offsets on the band. For the purpose of locking the sections after extension a device is included which automatically closes the ring clamps. Each length of tube is slotted by a longitudinal saw cut, and each clamp is closed and opened by a forked arm, projecting upward when the clamp is open and downward when the clamp is closed. The arrangement is shown in Fig. 8, its operation being as follows:—After any one section has been completely raised and the next section has begun to rise, the clamp

Fig. 4. The "Comet" Mast.

fork engages a pin carried on a bracket projecting from the bottom section of the mast, and the rising of the section causes the fork to be pulled down, thereby locking the ring clamp. In this way all the clamps are locked in succession. They are unlocked by a reversal of the process when the mast is being closed.

Apart from their utility as hoists and for the support of a small working platform, these masts can be used as poles for scaffolding inside buildings, while two or more of them can be used as standards for a gangway across their tops, thus enabling men to execute repairs or other work on exterior surfaces, the height of the working platform being adjusted from time to time as required.

The mast is made in numerous sizes up to 230 ft. high when extended, this size comprising thirteen sections and weighing about 10 cwt.

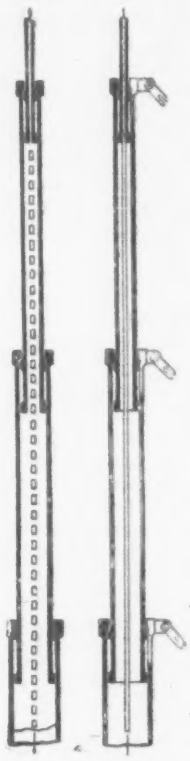


Fig. 5. Section of "Comet" Mast.

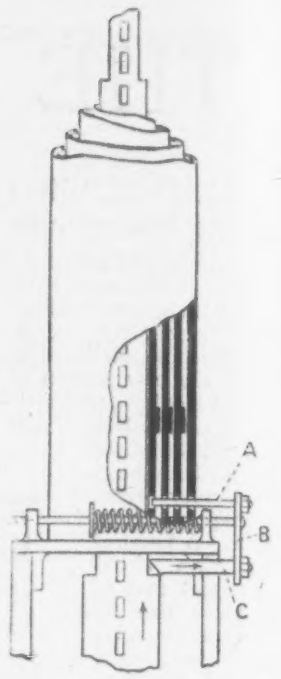


Fig. 6. "Comet" Mast Tube Retainer.

THE MEDIÆVAL BUILDER'S LABOURER.

THE mediæval builder's labourer was, as to-day, the man who was employed to do the rough work for the mason, bricklayer, tiler, and various others. With each skilled man a labourer was generally associated.

The common rate of wages paid to the labourer in the XVth century was 5d. or 5½d. a day; in the XIVth century it was considerably less.

It will be noticed in reading the accounts of the cost of the repair of buildings in the Middle Ages that the builder's labourer was employed, or rather attached, to those craftsmen whose business it was to work on, or with, heavy materials, such as stone, tiles, plaster, and so forth. The carpenter, glazier, etc., working upon the lighter materials, are not referred to as having an attendant labourer.

We will give several references from documents of the Middle Ages which will not only substantiate the above, but be of interest in themselves as references to mediæval builders' labourers.

In Mr. Overall's Churchwarden's Accounts of the Church of St. Michael in the City of

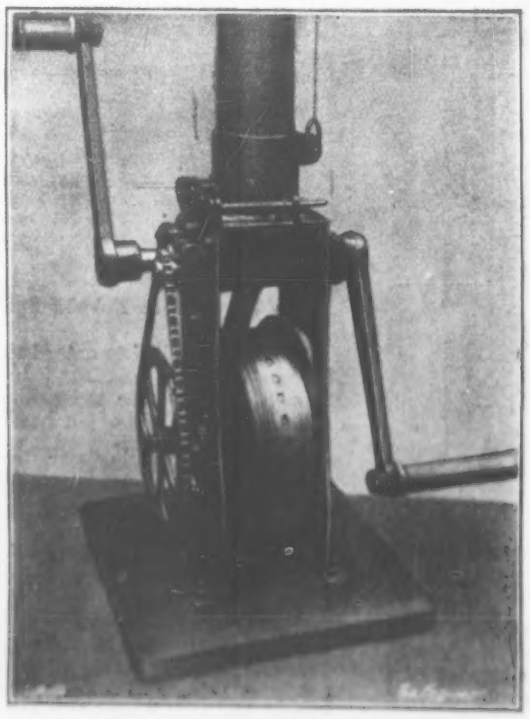


Fig. 7. "Comet" Mast Hoisting Gear.

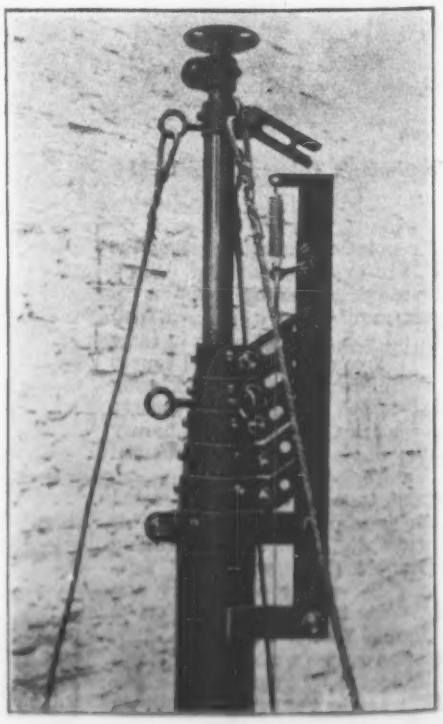


Fig. 8. "Comet" Mast Automatic Locking Device.

A XVth-Century Mason's Labourer, with wheelbarrow.

London we read of a mason being called in to do work in the church. The mason was paid 8½d. for the day, and the payment to his labourer reads:—

"Item paid to his laborer the same day—V½d."

This was in 1456, and in 1460 we read again, "to a laborer to serve the mason."

In 1469 two masons working for two days and a half received 3s. 4d.; the two labourers for the same time received 2s. 1d. All this shows very clearly that each mason had his labourer to bring him materials and do the unskilled part of the mason's work.

Sometimes, however, labourers worked for themselves independently. In the same book of accounts we read that two labourers were employed to carry a number of tiles from the church steeple, each receiving 5d. a day for the labour.

The same references to labourers occur in the Accounts of St. Mary-at-Hill, published by the Early English Text Society. Here we read of a labourer in 1429 being employed to serve a tiler. The tiler was paid at the rate of 8½d. a day, the labourer receiving 5½d.

In 1477 payment was made to "ii. tylers and ii. laboreris, wirkyng apon John Williamson's howse," and in the same year the churchwardens record a payment "to a dawber and his laborer, wirkyng in the tenement of John Brewster, tornour, in Estchepe" (Eastcheap).

It will be noticed that the labourers were paid by the day and half-day, not by the hour.

Though there are so many references in mediæval accounts to the builder's labourer, they almost all of them consist merely of the plain statement of the amount paid. In some few instances the place of employment finds mention, but in no case is the name of the labourer given. The names of skilled workmen, such as carpenters, joiners, masons, etc., constantly find mention, but the name of the labourer, so far as we are aware, is never recorded, probably on account of his humble position.

Our illustration is a reproduction of a miniature in a MS. in the British Museum—MS. 18 E. V., f. 99. The picture is of value for two reasons:

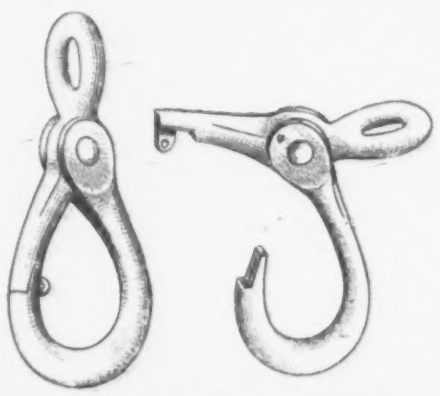
1. It shows us the exact relation of the division of labour between the mason and his labourer.
2. It exhibits very clearly the common dress of the mediæval builder's labourer.

NEW CHURCH, PLYMOUTH.

The estimated cost of the erection of the church is 4,000*l.*, and the architect is Sir Aston Nicholson. The part now to be proceeded with is the chancel and the east nave.

A SAFETY CRANE HOOK.

THE illustration reproduced in this page represents the Norden safety crane hook, a device designed to be self-closing, and consequently combining the handiness of a plain hook with the security of a shackle. The apparatus comprises the hook proper and the guard, these two parts being connected by a steel pin passing through eyes as shown. As the eye for attachment of the hoisting line or chain is formed in the upper end of the guard, the latter is automatically closed directly any load comes on the hook. The centre of the hinge pin is placed a little beyond the centre line of the hook, so as to cause the guard to press tightly against the



The Norden Self-closing Safety Crane Hook.

end of the hook and to make the projecting lug on the guard pass through the slot in the hook, where it can be secured by a cotter if thought necessary. The arrangement has the effect of distributing part of the load to the guard, thereby reducing strain on the hook proper. The device is made in vanadium steel in sizes for loads of 3, 10, and 18 tons respectively.

GENERAL BUILDING NEWS.

NEW CHURCH, MANSFIELD.

Mr. L. Ambler, F.R.I.B.A., is the architect for this church, which has been erected at Forest Town, and the cost of the building was about 3,800*l.* The contract was carried out by Messrs. Vallance & Son, builders, of Mansfield.

NEW CHURCH, HALIFAX.

This church, which is to be erected at Northowram, is designed by Mr. J. F. Walsh, architect. The seating accommodation will be for 700 persons, and a detached tower is to be erected on the north-east side of the church.

CHURCH EXTENSIONS, MAINDEE, NEWPORT.

The extensions to St. John's Church are being carried out from plans prepared by Mr. Coates Carter, architect, of Cardiff. The estimated cost is 5,000*l.*, and the builder is Mr. W. A. Linton.

NEW SCHOOLS, CHELMSFORD.

These schools were opened last week, and have been erected from the designs of Mr. W. H. Pertwee, architect, of Chelmsford. The estimated cost of the buildings was 13,475*l.*, and the contractors were Messrs. H. Potter & Son, of Chelmsford.

BUILDING STRIKE, LLANDUDNO.

The labourers employed in the erection of the new higher standard school at Llandudno went out on strike on Monday of last week for an increase of a halfpenny in their wages. Their present wage is 5d. per hour, and they have been working ten hours a day.

APPLICATIONS UNDER LONDON BUILDING ACTS, 1894 to 1909.

AT Tuesday's meeting of the London County Council the following applications under the London Building Acts were dealt with (the names of the applicants are given in parentheses).

Lines of Frontage and Projections.

Chelsea.—Iron and glass conservatory over the one-story portion in front of No. 31, Lowndes-square (Messrs. Robersons, Ltd., for Mr. J. A. Mullens).—Consent.

Clapham.—Erection of a church on the northern side of Culmstock-road, Clapham Common, to abut also upon the eastern side of Alfriston-road (Messrs. J. S. Quilter & Son).—Consent.

Fulham.—Cinematograph building upon the site of Nos. 260 and 262, North End-road, Fulham, with a one-story portion in front (Mr. J. S. Beard).—Refused.

Norwood.†—Erection of a building on the southern side of Wolfington-road, Norwood, between No. 66B, Knight's-hill, and No. 1, Wolfington-road (Mr. A. R. Westworth for Mr. T. Marten).—Consent.

St. George-in-the-East.—Building on the southern side of Commercial-road East, St. George-in-the-East, between Upper Fenton-street and Anthony-street (Messrs. Billings, Wright, & Co. for the Feinman Yiddish People's Theatre Company).—Consent.

Strand.†—Projecting illuminating sign at No. 54, Haymarket (Messrs. R. J. Back & Co. for Messrs. J. A. Sinclair & Co., Ltd.).—Consent.

Wandsworth.—Bay windows, oriel windows, porches, and bargeboards in front of Nos. 100 to 124 (even numbers only), inclusive, Pretoria-road, Streatham (Mr. H. Thorp).—Consent.

Wandsworth.—Oriel window in front of No. 27, Drewstead-road, Streatham (Messrs. Pratt Brothers).—Consent.

Wandsworth.—Re-erection of the "Railway Bell" beerhouse, on the western side of Mitcham-road, Tooting (Messrs. Nowell, Parr, & Kates).—Consent.

Woolwich.—Erection of Nos. 30 to 44 (even numbers only), inclusive, Dunvegan-road, Woolwich (Mr. J. J. Bassett).—Consent.

Cubical Extent.

Battersea.—Erection of a building exceeding 250,000 cubic feet in extent at the premises of Messrs. Garton, Hill, & Co., York-place, Battersea (Messrs. Garton, Hill, & Co.).—Consent.

Cubical Extent and Space at Rear.

Brixton.—Re-erection of Nos. 476 to 484, Brixton-hill, and Nos. 1, 3, and 5, Tunstall-road, Brixton, with the trade portion exceeding 250,000 cubic feet in extent and with an irregular open space at the rear (Mr. J. W. Stevens for Messrs. Morley & Lanceley, Ltd.).—Consent.

Strand.—Erection of a building upon the site of Nos. 188 to 196 (even numbers only), inclusive, Regent-street, and Nos. 55 to 56, Kingly-street (Messrs. W. Woodward & Sons).—Consent.

Uniting of Buildings.

City of London.—Alterations and additions at premises abutting upon Newgate-street, Warwick-square, and Phœnix-court, City (Mr. C. Stanley Peach for the Oriental Carpet Manufacturers, Ltd.).—Consent.

Holborn.—Openings on the ground and first floors in the party wall between Nos. 118-122, Holborn, and Nos. 107-8, Hatton-garden (Mr. J. Sawyer for Messrs. A. W. Gamage, Ltd.).—Consent.

Peckham.—Double rolling shutters in lieu of double iron doors to an opening in a division wall at a motor garage, Red Bull-yard, Peckham High-street (Messrs. A. L. Gibson & Co. for Messrs. T. Tilling & Co., Ltd.).—Consent.

Woolwich.—Double steel roller shutters in lieu of double iron doors to certain openings in division walls of a building at the premises of Messrs. Siemens Brothers & Co., Ltd., on the eastern side of Hardens Manorway, Woolwich (Messrs. Siemens Brothers & Co., Ltd.).—Consent.

Deviation from Certified Plan.

Kensington, North.—Re-erection of a portion of the "Golden Bells" hotel, Notting Hill-gate (Mr. W. Hancock).—Consent.

Alteration of Buildings.

Kensington, South.—Alterations in the basement of No. 13, Addison-road, Kensington (Messrs. Joseph & Smithem for Mr. A. Levine).—Consent

St. George-in-the-East.—Alterations to the "Bricklayers' Arms" public house, Fenton-street (late Upper Fenton-street), St. George-in-the-East (Messrs. A. R. Stenning & Partners for Mr. F. M. Fry).—Consent.

Buildings for the Supply of Electricity.

Hampstead. — Two wooden cooling-towers with steel substructures at the Hampstead Metropolitan Borough Council's electricity generating-station, Lithos-road, Hampstead (Mr. G. H. Cottam for the Hampstead Metropolitan Borough Council).—Consent.

Uniting of Buildings.

City of London.—Formation of an opening between Nos. 1 and 2, Cheapside, at the ground-floor level (Mr. G. R. Farrow for Farrow's Bank, Ltd.).—Consent.

City of London.—Formation of three openings between Nos. 16 and 17, Holborn-viaduct, at the second-floor level (Mr. W. E. Clifton for the Holborn Viaduct Land Company, Ltd.).—Consent.

City of London.—Uniting of Nos. 16 and 18, Moorfields, City (Boot's Pure Drug Company, Ltd.).—Consent.

Hackney, Central.—Opening uniting buildings abutting upon Glebe-road and at the rear of Nos. 432 and 434, Kingsland-road (Messrs. Sinclair & Son for Mr. W. E. Garstin).—Consent.

Islington, West.—Opening of a larger size than specified in the said section in a division wall at Messrs. Callow's van works, Pembroke-street and Bemerton-street, Islington (Messrs. Lovegrove & Papworth).—Consent.

Kensington, North.—Uniting of Nos. 11 and 12, Bolton-mews, Kensington, at the ground-floor level (Mr. L. Cutting).—Consent.

Limehouse.—Openings in the party wall between Nos. 125 and 127, Salmon's-lane, Limehouse (Messrs. H. Bignold & Idle for Mr. H. J. Knowlden).—Consent.

Marylebone, West.—Openings in the party wall between Nos. 3 and 4, Barrett-street and No. 5, Barrett-street, St. Marylebone (Mr. G. Langford for Mr. C. Pedlar).—Consent.

St. George, Hanover-square.—Formation of an opening at the first-floor level in the party wall between Nos. 24 and 25, Conduit-street, St. George, Hanover-square (Mr. A. B. Jackson for Mr. G. Boudon).—Consent.

St. Pancras, South. — Enlargement of an opening uniting No. 42, Tottenham-street, with a factory at the rear next to Tottenham-mews, St. Pancras (Mr. J. C. Mather for Messrs. Parkins & Co.).—Consent.

Cubical Extent and Uniting of Buildings.

St. Pancras, East.—Formation of a doorway in one of the division walls between blocks A and C, and the use of double-armoured doors to such opening (Messrs. Burton & de Bertodano for the F.I.A.T. Motor Cab Company, Ltd.).—Consent.

Strand.—Erection of a building on the site of Nos. 188 to 196, inclusive, Regent-street, and Nos. 53 to 55, Kingly-street (Messrs. W. Woodward & Sons for Messrs. Swears & Wells).—Refused.

The recommendations marked † are contrary to the views of the metropolitan borough councils concerned.

PROJECTED NEW BUILDINGS IN THE PROVINCES.*

ABERBARGOED.—Fire-station (505*l.*): Messrs. G. Beames & Co., builders, 16, Violet-road, Roath, Cardiff.

Banbury. — Extensions to Berrymoor Laundry; Mr. G. Earley, architect, Bridge-street, Banbury.

Bargoed.—School (5,000*l.*); Mr. D. P. Jones, architect, Charles-street, Cardiff.

Barleston and Hugglecote (Leicester).—School; Mr. C. Fowler, architect, 33, Bowling Green-street, Leicester.

Barnt Green (Birmingham).—Police-station; Mr. A. Rowe, architect, Foregate-street, Worcester.

Birmingham. — Factory, Brook-street; Messrs. E. Harper & Bro., architects, Ruskin-chambers, Birmingham; Mr. C. Bryant, builder, Small Heath, Birmingham. Christ Church schools; Mr. M. E. Type, architect, Edmund street, Birmingham; Messrs. Whitehouse & Son, builders, Waterworks-road, Edgbaston, Birmingham. Theatre, High-street, King's Heath; Mr. V. Peel, architect, Temple-street, Birmingham. Jewellers' school; Messrs. Cossins, Peacock, & Bewlay, architects, 83, Colemore-row, Birmingham; Messrs. J. Dallow & Sons, builders, Blackheath, Birmingham. Factory, Garrison-street; Messrs. Richard Fenwick, Ltd., builders, 40, William Edward-street, Birmingham.

Bispham.—Additions to hydro for the Cleveley's Hydro Company.

Bolton.—Tramway repair depôt; Messrs. Townson & Sons, builders, Park Hill street, Bolton.

Bolton-on-Dearne.—School (2,500*l.*); Mr. J. Stuart, architect, County Hall, Wakefield.

Boxted.—School; Mr. J. H. Nichols, Secretary, Education Committee, Essex County Council, Chelmsford.

Bristol.—Rebuilding premises, Castle-street, for Mr. S. H. Justin.

Briston.—School; Mr. W. V. Bushell, Secretary, Education Committee, Norfolk County Council, Norwich.

Broomfield.—School (4,476*l.*); Mr. J. T. Bailey, builder, Chelmsford.

Brymbo.—School; Mr. W. D. Wiles, architect, High street, Wrexham.

Burton-on-Trent. — Governor-house for gas depôt (2,250*l.*); Mr. Geo. Hodges, builder, Horninglow-street, Burton-on-Trent.

Chatham.—School (8,220*l.*); Messrs. Godden & Sons, builders.

Collieston.—Enlargement and improvement of school for the Slains School Board.

Dairycotes (Hull).—School, Hessel-road; Dr. J. T. Riley, Secretary, Education Committee, Hull Town Council.

Dalkeith. — Bank premises; Messrs. S. Mitchell & Wilson, architects, Edinburgh.

Derby.—Bank, Midland-road; Mr. R. C. Thirby, architect, Irongate, Derby.

Dover. — School, Borton-street; Mr. R. Hawke, architect, Maison Dieu House, Dover.

Dundee.—House, Sandeman-street; Mr. Jas. Sibbald, architect, 25, Commercial-street, Dundee. Offices, warehouses, etc., South-road, Lochee, for Messrs. East Bros., Ltd.

Dunfermline. — Council offices, Maygate (6,000*l.*); Surveyor, Dunfermline Parish Council.

Edinburgh. — Established Church; Pastor, St. David's Established Church, Edinburgh.

Exeter. — Alterations at Cattle Market (1,530*l.*); Mr. E. H. Westcott, builder, Heavitree, Exeter.

Folkestone.—Additions, public baths, Foord-road; Mr. A. E. Nichols, Borough Surveyor, Folkestone Town Council.

Friezland (W.R. Yorks).—School; Mr. W. V. Dixon, Secretary, Education Committee, W.R. of Yorks County Council, Wakefield.

Gale.—Shop and eight houses for the Littleborough Co-operative Society.

Gateshead.—Improvements at St. Mary's Church (800*l.*); the Vicar.

Glasgow.—Church offices, etc., corner of Battlefield and Cathcart roads, for the Deacons' Court of the Battlefield United Free Church.

Halfway.—School (300 places); Mr. J. W. Nicholas, Secretary, Education Committee, Carmarthenshire County Council, Carmarthen.

Halifax.—Six tramway shelters; Mr. W. M. Rogerson, Electrical Engineer, Halifax Town Council.

Heath Hayes.—Club, Hednesford-road, for the Heath Hayes Liberal Association.

Hove.—Proposed school, corner of Dyke-road and Old Shoreham-road; Mr. A. F. Graves, Clerk to the Governors, 117, North-street, Brighton. The following plans have been passed:—Mr. T. Barnard, ten houses, Langdale-road; Mr. F. Parsons, eight houses, Vallance-road; Mr. S. James, for Mr. C. Blandford, garage, Pembroke-crescent. A plan has been lodged by Messrs. Clayton & Black, for Mr. E. A. Smithers, for alterations and additions, "The Gables," Furze Hill.

Howden.—Additions and improvements at laundry; Mr. H. Green, Clerk, Board of Guardians, Howden.

Hyndland (Glasgow).—Tenement of houses, corner of Hyndland and York drives, for the Western Shops Company.

Lakenham.—School; Mr. C. Brown, architect, Cathedral House, Norwich.

Londonderry.—Restoration of St. Columb's Church; Messrs. Bachelor & Hicks, architects, Merrion-square, Dublin.

Maesteg (Glam.). — Extensions, Town Hall and market place (3,000*l.*); Mr. S. J. Harper, Surveyor, Maesteg Urban District Council.

Mapperley.—School; Mr. L. Maggs, architect, Shire Hall, Nottingham.

Matlock. — Post-office; Mr. H. Hopkinson, architect, Worksop.

Mellor.—Conservative club and hall; local Conservatives.

Millom (S.O., Cumb.).—Alterations to school (1,500*l.*); Mr. R. G. A. Bradley, builder, Salthouse-road, Millom.

Milton.—School (5,700*l.*); Mr. W. Hutchings, architect, County Hall, Stafford; Mr. Jas. Moss, builder, Milton.

Newcastle-on-Tyne. — Additions, cottage homes (4,030*l.*); Messrs. E. Henderson & Sons, builders, Ponteland, Northumberland.

North Staffs. — Additions, North Staffs Infirmary; Messrs. Scrivener & Sons, architects, Shelton, Hanley; Mr. S. Wilford, builder, Newcastle, Staffs.

Nottingham.—Extensions, Children's Home, Edward-lane; Mr. W. B. Starr, architect, Victoria-street, Nottingham; Messrs. Gilbert & Hall, builders, Crocus-street, Nottingham. Veterans' and Union Jack Club, Carlton-road; Mr. Arthur Marshall, architect, Russell-chambers, King-street, Nottingham.

Parkstone.—Extensions, St. Osmund Church (6,000*l.*); the Vicar.

Paulton.—Alterations to premises for Messrs. Parnell.

Plymouth.—The following plans have been passed:—Messrs. Vickery & Sons, alterations and additions, premises, corner of Bedford and Cornwall streets; Messrs. Andrew & Co., Ltd., motor garage, etc., Bound's-place; Architect, care of Building Committee, church, Alvington-street.

Rotherham.—School, Kimberworth (15,660*l.*); Messrs. W. Nicholson & Son, Ltd., builders, Prospect Saw Mills, Sheaf-street, Leeds. The following plans have been passed:—Mr. H. James, sixteen houses, Selwyn-street; Messrs. Baines & Co., Ltd., extensions and additions to Phœnix Brass Works, Greasbro'-road; the Trustees, United Methodist Church, chapel (455 places), also schoolroom (270 places), Gerrard-road and Tooker-road; Mr. Henry Addis, four houses, St. Stephen's-road; Messrs. J. J. Habershon & Sons, additions to works.

Salford.—Extensions to offices, Eccles New-road; Mr. F. Townson, Clerk, Board of Guardians, Salford.

Scunthorpe.—Church, junction of Frodingham-road and High-street (3,030*l.*); Messrs. Pattinson & Son, builders, Ruskington.

Shepshed.—Offices for the Shepshed Hosiery Company.

Silsden.—Cooking centre; Mr. J. Stuart, architect, County Hall, Wakefield.

Smallthorne.—School (5,700*l.*); Messrs. J. Moss & Son, builders, Milton.

Smethwick.—Extensions to factory, Foundry-lane, for Messrs. G. Wrigley & Co., Ltd. Extensions to factory, Halford-lane, for Messrs. Hope & Sons, Ltd. Extensions to factory, Bridge-street, for Messrs. Allen, Everett, & Co., Ltd.

Stretford.—The following plans have been passed:—Messrs. J. Greenwood & Sons, Ltd., mill, Trafford Park; Mr. Paul Powell, picture palace, Chorlton-road.

Swansea.—Proposed civic centre; Mr. Geo. Bell, Surveyor, Swansea Town Council.

Torquay.—The following plans have been passed:—Sister Superior, additions, St. Vincent's Orphanage; Mr. J. H. Midgeley, additions, "Birstwith"; Mr. E. G. Easterbrook, additions, Geneva Bakery; Mr. Kellow, four houses, Happaway-road.

Tunstall.—School, Goldenhill; Messrs. A. R. Wood & Son, architects, Burslem; Mr. P. Pemberton, builder, Tunstall.

Ulverston.—Coronation hall, Wytarn Estate (5,000*l.*); Messrs. Settle & Brundrit, architects, Ulverston.

Walsall.—The following plans have been passed:—Mr. W. Oakley, shop premises, Wolverhampton-road; Mr. S. Moseley, four houses, Beatrice-street, Leamore. A plan has been lodged by Mr. E. Smith for alterations and additions, premises, Stafford-street.

Warsop.—School, Burn's-lane; Mr. C. J. Bristowe, Secretary, Education Committee, Notts County Council, Nottingham.

Waterloo.—School (1,200 places); Mr. H. T. Rutherford, Secretary, Education Committee, Blyth Urban District Council.

Wigan. — The following plans have been passed:—Mr. Peter Fairhurst, three houses, Smethurst-road; the Trustees, Primitive Methodist Church and School, Enfield and Wesley streets.

Ystalyfera.—Fifty houses: Surveyor, Pontardawe Urban District Council.

* See also our list of Competitions, Contracts, etc., on another page.

THE LONDON COUNTY COUNCIL.

THE usual weekly meeting of the London County Council was held in the County Hall, Spring-gardens, S.W., on Tuesday, the Chairman, Mr. Edward White, presiding.

LOANS.—The Finance Committee recommended, and it was agreed, that a loan of 900*l.* should be made to the Greenwich Borough Council for the purpose of extending into Deptford Creek the frontage of the Norman wharf depôt and part of the cost of the boundary wall.

INTERNATIONAL CONGRESS OF ARCHITECTS.—At the request of the Royal Institute of British Architects, the Architect of the Council, Mr. W. E. Riley, is to represent the Council at the International Congress of Architects to be held at Rome in October next.

LAMBETH BRIDGE.—It was recommended by the Improvements Committee that application be made to Parliament for authority to reconstruct this bridge as a steel arch bridge, 48 ft. wide, at an estimated cost of 220,000*l.* This was agreed to.

ST. PAUL'S BRIDGE.—It was stated by the General Purposes Committee that the City Corporation had requested permission for the Chief Engineer of the Council to give evidence before the Committee of the House of Commons which was dealing with the scheme, and that permission had been given.

Mr. J. D. Gilbert, in considering this question, said that it was a matter of great regret and surprise that the London County Council had not been asked to express an opinion on the matter of this new bridge, and also he considered that the Parliamentary Committee should have requested that the Architect to the Council be called to give evidence "on behalf of the Council," and not in a private capacity.

Mr. Gilbert went on to say that there was no reason why the Council, the greatest municipal body in this country, should not be represented on the Committee, and that the money for the scheme did not belong to the Bridge House Estates Committee, but to London. He said that there had been much controversy in the public Press as to whether there should be a bridge leading from St. Paul's or whether it should be somewhere else, but he thought the Council should have an opportunity of giving their views on the matter.

Mr. Taylor, in replying, said that there had already been three eminent architects chosen to give evidence before the Committee, and that these gentlemen would no doubt see that the scheme proposed, should be one that would be all that was desired.

FIRE-STATION.—It is proposed to carry out certain necessary repairs and alterations which are required at the Whitefriars fire-station at an estimated cost of 54*l.* The Fire Brigade Committee reported that painting work is to be carried out at various fire-stations, and that tenders had been received for that purpose. Tenders are also to be invited for electric lighting at the Kennington fire-station.

PUMPING PLANT AT COLNEY HATCH.—It is reported by the Asylums Committee that it is considered advisable to install a sewage pump at Colney Hatch Asylum, which will have a capacity of 300 gallons an hour and to be driven by a gas-engine, instead of the hand pump now in use.

LONG GROVE ASYLUM.—It is also proposed to widen the verandahs attached to the admission hospital villas, for the purpose of the accommodation of patients in bed, and the Asylums Committee stated that the estimated cost of the alteration was 190*l.* It was also reported by the same Committee that a house was to be erected at this asylum for the first assistant medical officer.

TOWN PLANNING CONFERENCE, WEST BROMWICH.

A CONFERENCE of municipal authorities on the subject of town planning, convened by the Institution of Municipal and County Engineers, was opened recently in the lecture theatre of the Institute, West Bromwich. Mr. A. D. Greatorex, M.Inst.C.E., President of the Institution, presided, and there were present representatives of municipalities and municipal engineers from all parts of the United Kingdom.

The President in his inaugural address said :—

"The town planning part of the new Act involves a mutual advance in the relations between the owners of land and the local authorities in this country, and enables each party to co-operate with the other in promoting the general interest.

Many complaints have been made as to the complicated nature of the regulations issued by the Local Government Board, but you have, no doubt, seen sufficient of the working of the Act to recognise its immense value in dealing with this problem.

The necessary amendments to the Housing and Town Planning Act can only be brought about by a careful study of what is a complex Act in all its manifold and intricate bearings. The aims of the Act are undoubtedly high, and have for their object the permanent improvement of the public health. The future alone will prove whether this portion of the Act is in many cases as unworkable as some of its critics say it is. The initial stages of several schemes are already being proceeded with by local authorities, and no town has shown more interest and practical consideration of this subject than the neighbouring city of Birmingham

For the improvement of our towns the first thing to be demanded is the provision of worthy routes connecting the centre with the open country. The development of the tramways is resulting in a continually increasing proportion of the population being brought to their daily work, and if the routes are finely planned and studied with a view to their artistic effect they will in themselves exercise an educational influence on all who use them.

Expressions of opinion have been given to the idea that municipal engineers and surveyors are not the proper persons to be entrusted with the carrying out of this Act, but that members of other professional bodies are more competent to undertake this work. Who, after all, is better able and qualified than the local surveyor, by reason of his knowledge of not only the internal working of the Act, but by his general knowledge as to what is necessary as regards the development of the district and the lines which it should take? But we must show ourselves able to fulfil these duties.

It therefore behoves every member of this Institution, especially those who are likely to have to deal with this subject, to make themselves thoroughly acquainted with not only the various clauses of the Act, the regulations framed and issued by the Local Government Board, but with all the developments which take place from time to time in connexion with the subject.

The desire of the Council in arranging this Conference was of a twofold character—firstly, to ventilate the subject amongst the members of the Institution, and thus to give them the opportunity of becoming fully acquainted with the method of its working and latest development, and, secondly, to show to the general public, and especially the members of the various local authorities, that the engineer and surveyor was fully alive to his added responsibilities and well able to perform the extra duties placed upon him by the Act when called upon, and, at the same time, to show that on account of the peculiar position in which he was placed no one was better able to deal with this subject.

Conferences alone will not solve the problem, but they undoubtedly have a very definite value in this connexion, because the majority of the delegates go prepared either to add their quota of knowledge to others or to learn something which may throw light upon some of their own local difficulties."

Mr. W. T. Lancashire, M.Inst.C.E., City Engineer of Leeds, presented the first paper, on "Town Planning in Congested Areas and Improvements and Street Widenings in the City of Leeds." He said that, like many other of the great commercial and industrial cities, Leeds no doubt failed to realise the possibilities of its growth. The total capital expenditure on street widenings and improvements had been 2,318,043*l.* The outstanding debt amounted to 2,092,044*l.*, equal to a charge of 1s. in the pound for interest and sinking fund charges. The total length of street widenings and improvements and new streets carried out by the City Council in a period of about forty years was over 36½ miles. This was exclusive of widenings carried out by owners of land at their own expense. The buildings erected during the last few years were generally on a much larger scale, often of considerable architectural merit, and the city had consequently gained largely in this respect. Although these improvements had resulted in the possession of many streets and buildings of which Leeds was justly proud, it could not be argued that reconstruction was as satisfactory as construction properly planned in the first instance, apart from the extremely heavy extra cost. One was bound to realise that in some cases there had been no design beyond street widening and better travelling facilities, no *motif* beyond the wider streets and the better buildings which had followed the widenings, and some of the fine new buildings had been erected where it was impossible to appreciate properly the full beauty of the architect's creation. In the matter of width it was impossible to satisfy different interests. Often one heard the opinion expressed by shopkeepers that a street must not be widened beyond quite a limited amount, or it would be ruined from their point of view, whereas the tramway and other traffic called for much greater width to cope with the needs of the travelling public. Experience in Leeds proved that a bold policy in the width of streets was best. The number of parks and recreation-grounds was twenty-eight, and three more were leased for long terms of years. The total area amounted to 1,171 acres, equal to about 10 per cent. of the built-up area of the city. The total capital expenditure had been 549,639*l.*, and the annual charge was 30,817*l.*, equal to a rate of 3·47d. in the pound. The cost reached a formidable figure, but the reduction in the death-rate (largely attributable to these works), the greater convenience obtained, and the justifiable increase in pride in the city should reconcile most of the inhabitants to the heavier demands made by the rate collector.

LAW REPORTS.

HIGH COURT OF JUSTICE, CHANCERY DIVISION.
(Mr. Justice EVE.)

Dispute as to a Party Wall.
Carden *v.* Layton.

THIS action came before his lordship on Friday, July 7, on motion by the plaintiffs, W. A. Carden, A. J. Carden, and Charles Stubbs Layton, suing as trustees of the will of the late Wm. Carden, against the defendant, W. F. Revill Layton, of Hampton Hill. The plaintiffs asked for an injunction to restrain the defendant from cutting into, under-pinning, raising, thickening, or otherwise interfering with, or trespassing upon, the party wall on the south side of the plaintiffs' premises, No. 19, Goswell-road, Finsbury. without complying with the procedure laid down under the London Building Act, and also a mandatory order on the defendant to pull down the wall he had built.

Mr. Clayton, K.C. (with him Mr. Cozens-Hardy,) said that in answer to the affidavit filed in support of the motion the defendant had filed evidence which raised a conflict of fact. There were matters as to which there was no dispute, which he (counsel) thought would entitle the plaintiffs to some relief on the motion, but many material facts were disputed. The plaintiffs had offered to let the motion stand over with a view of an early date being fixed for trial, but the defendant was not prepared to assent to that. The facts of the case were that the defendant's property was on the south side of plaintiffs' building, and he commenced to cut into the party wall without consulting the plaintiffs, who were the freeholders. He had given notice, however, to the leaseholders, and he had gone on with the wall to a height of 8 ft. 6 in. above the level of the pavement when the plaintiffs objected, and he then gave a verbal undertaking not to proceed with any work in connexion with the wall without the plaintiffs' consent. On June 6 plaintiffs discovered the defendant had carried the wall to a height of 19 ft., and plaintiffs' contention was that such wall was in

part bonded into the party wall. The defendant had also inserted a girder, which he said was a ledger, and his contention was that the wall he was building was a separate wall. There was a dispute as to that, but it was most important for the plaintiffs to be able to see whether the start of the wall was right, and they wanted to make some excavations in order to see that the thickening that was done before any undertaking was given was done in such a way as to be a proper foundation to the rest of the structure. The question was whether the building so far as it had gone up should be exposed so that the plaintiffs could see exactly what was there. Mr. Clayton submitted that the defendant infringed the common law rights of the plaintiffs before he gave notice. It was desirable that the case should be taken with witnesses so that his lordship should be able to decide as to the verbal disputes. Counsel added that in accordance with the provisions of the London Building Act each side had appointed a surveyor, and Sir Alexander Stenning had been appointed umpire, but the arbitration proceedings had been postponed pending the present application.

Mr. Lawrence, K.C.: I suggest that the arbitration under the Act should go on.

Mr. Clayton: My difficulty is that I want to see that the work already done has been properly done.

Mr. Justice Eve: Cannot you agree upon some gentleman to inspect the work and report upon it, and then allow the arbitration to proceed?

Mr. Lawrence: I am willing.

Mr. Justice Eve: Why not let the umpire report to the Court whether the work has been properly done, and for that purpose the defendant will give him all facilities.

After further discussion it was agreed that by consent Sir A. Stenning should be appointed to report to the Court whether the work already done had been done properly and in accordance with the requirements of the London Building Act, and for that purpose he should be allowed to make any necessary excavations or pulling down to expose the work done.

Mr. Justice Eve: There will be liberty to apply when the report is received, and the motion in the meantime will stand adjourned.

Contractor's Action against Building Owner.

MR. MUIR MACKENZIE, High Court Official Referee, began on July 5 the hearing of an action by Mr. Frederick George Minter, a contractor living in Wimbledon, against Mr. Charles Waldstein, a Professor of Fine Art at the University of Cambridge, in respect of certain payments alleged to be due to Mr. Minter under a building contract involving the pulling down and reconstruction of Newton Hall, near Harston, five miles from Cambridge.

Mr. Lewis Thomas, K.C., supporting the claim, said that Professor Waldstein selected to carry out his wishes Mr. Frederick William Foster, a well-known architect, as well as an artist in brick, stone, and timber, and who had carried out work of a very high-class character for millionaires like Mr. Alfred Rothschild. Bills of quantities were subsequently prepared and specification and designs carried out. The contract was entered into on February 3, 1910, and the contract price for the building was 12,975*l.* The building was to be finished within six months. The work was immediately entered upon and carried out without any hitch or difference between the employer and the architect or between the contractor and the architect right up to January of this year.

There were complaints from the defendant after that date as to alleged defective work. Subsequently Mr. Waldstein paid the plaintiff 1,500*l.*, under the architect's certificate, under protest. Another certificate for 2,750*l.* was issued. This was the amount sued for in these proceedings. The defendant had alleged, amongst other things, that a considerable amount of work was not authorised directly or indirectly, and that a considerable amount of work was defective, and that the plaintiff's prices were excessive. Mr. Minter was quite prepared at any time to repair defects if only told what they were. Counsel mentioned that the defendant, a gentleman with æsthetic tastes, wanted the new building to look as much as possible like a building in the reign of George I.

Mr. Lewis Thomas further pointed out that from start to finish the work was carried out under the supervision of a resident clerk of the works, under whom Mr. Minter had been told to take his instructions. The defendant had in these premises installed seventy-four heat radiators and their attendant pipes—there were 140 ft. of hot-water pipes. Mr. Waldstein had followed what Mr. Thomas described the stupid American plan of "broiling the house out." Mr. Waldstein had, too, wanted done, work which to be done satisfactory should have taken from nine to twelve months; but Mr. Waldstein had insisted on having this contract carried out in a period of six months. The defendant had alleged, amongst other things, that the roof was of unsound construction and workmanship, and that there were settlements, that the drainage system was defective, that brickwork was bad, and that the mortar was inferior. Throughout the whole building, said Mr. Thomas, there were matters which had the appearance of being serious and important, but in all these details shown in defence there were a series of complaints which the merest tyro in a builder's office would be astonished to see listed, still less men of greater experience. His client had done all that he had contracted to do. There were in detail in these paragraphs of defence 293 items, and one could boil them all down into two items. One concerned the roofing, and the other had relation to joists and flooring. Counsel submitted that for certain of the defects—if they existed—his client was not responsible, and, as for the others, he would call evidence to refute the defendant's suggestions. Counsel added he also disputed the defendant's suggestion that he had at any time revoked the authority of Mr. Foster to act on his behalf. In the course of further references to the defendant's allegations, Mr. Lewis Thomas insisted that at the defendant's own wish variations from the drawings and specifications were made. He instanced alterations that he said had to be made in connexion with a bell-turret on the roof, so that it might be seen from all parts of the estate, and satisfy Professor Waldstein's liking for artistic effects. Counsel considered that the way in which the figures in the counterclaim were made up was really laughable when one came to analyse them.

Mr. St. John Morrow (counsel for the defendant): We have heard that before, Mr. Thomas.

Mr. Lewis Thomas: Perhaps you will begin to appreciate it, and then withdraw your counterclaim. Reverting to the allegation that Mr. Waldstein had overheated the house by radiators in order to take up residence there all the quicker, Counsel mentioned that Mr. Foster had wandered about the country in search of the beautiful and antique, and he thought that some old panelling he had seen would be an enhancement of the Professor's dining-room. He sent it down to Newton Hall, and it was erected so as to improve and beautify the dining-room. So great was the heat put on in this building that this old wood panelling had been split. Counsel suggested that certain of the alleged defects could be put right for a few pence. As for others, neither Mr. Minter nor the architect, Mr. Foster, had had the opportunity of putting them right.

Mr. Green was there with authority to give Mr. Minter directions on behalf of Mr. Foster. The correspondence showed Mr. Green to be the *alter ego* of Mr. Foster. Just as Mr. Foster acted by Mr. Waldstein's authority, so Mr. Minter had acted under Mr. Green's instructions. Counsel submitted that at the time Mr. Foster gave his certificate for 2,000*l.* odd that certificate was for money earned, and to which his client was entitled in any event.

Mr. Frederick Albert Minter, who said that he had been with his father eight years, and who took charge of the work at Newton Hall, gave evidence in support of the plaintiff's case.

He said that the ordinary time to carry out a contract of this kind was twelve months, but owing to the short time they were allowed, certain parts of the work had to be unduly hurried. The witness added that Mr. Foster told him he was to work under Mr. Green's instructions, and that any points that wanted settling he was to go to Mr. Green to settle them. Mr. Foster had told him that Mr. Green was a qualified architect. Witness took Mr. Green's instructions for variations and extras. When Mrs. Waldstein asked for certain things to be done he told her they were in the nature of variations and extras, and that the clerk of the works must be told.

The case was proceeding when we went to press.

WESTMINSTER CITY COUNCIL.

AT the fortnightly sitting of this Council on July 6 the following amongst other matters were dealt with:—

Piccadilly-Circus Rebuilding.—The Improvements Committee brought up a further report dealing with the application of Mr. J. Murray, F.R.I.B.A., for consent to the proposed new building lines for portions of Glasshouse-street, The Quadrant, Piccadilly, Piccadilly-circus, and Regent-street, W. The plan showed a straightening of the building lines on both sides of Regent-street from Jermyn-street to Piccadilly-circus, certain land being given up to the public, and other land being taken from the public way. The corner of Messrs. Swan & Edgar's premises is proposed to be set back some 10 to 12 ft., and the land added to the public way, while a small strip on the south side of the Quadrant is to be taken from the footway. The plan also showed a rebuilding of the existing columns of the County Fire Office in slightly altered positions, and a slight setting back of the building line on that side of Regent-street, while it is proposed to provide a short passageway for foot passengers under the corner, at the junction of Regent-street and Glasshouse-street. A narrow strip of land on the south side of Glasshouse-street is taken from the footway at that spot, while a small strip is given up to the public way. The Committee recommended that the Council disapprove of the proposed new building line. Mr. R. W. Granville Smith proposed as an amendment that the Council do approve of the new proposed building line, and appealed to the meeting not to adopt a "dog in-the-manger" policy, and so jeopardise a great municipal improvement.—The amendment was carried by a considerable majority.

LONDON COUNCILS.

Barnet.—A plan has been passed for Mr. W. C. Weymouth for St. Peter's Vicarage, Arkley.

Bermondsey. — The following plans have been passed:—Messrs. Barlow & Roberts, 15, Redcross-street, Southwark, five shops and houses, Tower Bridge-road; Messrs. J. A. Franey & Son, 152, Forte-road, S.E., for Drs. Salter, Richmond, Stratton, and Goldie, additions to 92, Southwark Park-road; Mr. W. Harbrow, South Bermondsey, for the Commissioners of Police, New Scotland-yard, S.W., alterations and additions to 67, Upper Grange-road.

Croydon.—Application is to be made by the County Council to the Local Government Board for sanction to borrow 4,500*l.* for carrying out works in connexion with the Norwood Junction subway. Plans, specifications, and estimates are to be prepared for the construction of a relief road from Thornton Heath to Purley *viâ* Thornton-road, Wadden Marchlane, Wadden Court-road, and Coldharbour-lane. The following plans have been passed:—Mr. C. H. Taylor, 9, Bingham-road, twelve houses and shops, Lower Addiscombe-road; Mr. P. Richardson, 2, Malvern-road, hall, St. Saviour's-road; Messrs. Chesterton & Sons, Norbury, three houses, Strathyre-avenue; Mr. C. S. Banks, 16, Oakfield-road, fourteen houses, Aurelia-road; Mr. W. Hine, Morland-road, four houses, Lower Addiscombe-road; Mr. D. Waller, Old Palace-road, warehouse, North-end; Messrs. Burberry & Wooldridge, 112*a*, Churchill-road, additions to hall, Thornton-road, St. Jude's; Mr. C. H. Ridge, 84, High-street, motor garage, rear of 110, High-street; Mr. H. W. Pratt, London, E.C., hall and class-rooms, Brighton-road, Purley.

East Barnet Valley.—According to a resolution moved by Councillor Ford, the Surveyor has been instructed to prepare plans and the estimated cost of providing public swimming and other baths on land in Lancaster-road. A plan has been passed for the Society of Friends for a meeting-house in Waterfall-lane.

East Ham. — The Engineer has been instructed to prepare plans and estimates of the cost of constructing three ladies' conveniences proposed to be erected in Station-road, High-street South, and Barking-road. Plans have been lodged by Mr. W. Stewart for alterations to "William the Conqueror" public-house, Greenhill-grove; also by Mr. E. J. Jenner for nineteen houses, Lancaster-road.

Greenwich.—Mauritius-road is to be repaired at an estimated cost of 122*l.* Plans have been passed as follows:—Mr. Edward Carter, works, Tunnel-avenue, for the British Oxygen Company; Messrs. Proctor & Sons, additions to Woolwich-road London County Council School; Messrs. Young & Hall, additions to Miller Hospital, Greenwich-road.

Hendon.—A plan has been passed by the Rural District Council for Mr. W. Fenn for Mr. G. Druett, ten houses, Southfields Park, Pinner. Application is to be made by the Urban District Council to the Local Government Board for a loan of 600*l.* to carry out kerbing, etc., works in part of Hammers-lane, Mill Hill. The Surveyor has been instructed to prepare an estimate of the cost of kerbing the footpath in Parson-street from Finchley-lane to Derby House. A report has been received from the Medical Superintendent at the Isolation Hospital as to the need of providing additional accommodation for the nursing staff, and the Surveyor has been instructed to prepare the necessary plans and estimates for the erection of a cottage near the hospital. The following plans have been passed:—Second Hampstead Tenants, Ltd., twelve houses, Addison-way, Hampstead Garden

Suburb, also ten houses, Erskine-hill; Mr. T. Waple, five shops, Laurance-street, Mill Hill; Messrs. Galliford & Saunders, six houses, Egerton-gardens; Mr. H. Dawson, twenty-two houses, Crewys-road, Child's Hill; Mr. T. G. Golby, six houses, Limes-avenue, Mill Hill; Mr. E. H. Waterman, twenty-six houses, Highfield-avenue, Golder's Green. The following plans have been lodged:—Sir Horace Regnart, four cottages, The Drive, Mill Hill; M. & Mme. Paul Perran, *café*, Colindale-avenue; Messrs. Hollis & Newcombe, eleven shops, Lawrence-street, Mill Hill; Mr. E. Bates, fourteen houses, Nant-road, Child's Hill.

Hornsey.—The tender of Messrs. E. Laurance & Sons, Ltd., has been accepted for the execution of contract works Nos. 1 and 2 at 1,376*l.* and 2,137*l.* respectively in connexion with the extension of the electric lighting station in Tottenham-lane. The following plans have been passed:—Messrs. Hollis & Home, Finchley, alterations and additions to No. 1, The Façade, Archway-road, Highgate; Mr. Hy. East, Redston-road, Hornsey, four houses, Linden-road, Crouch End; Mr. Henry Munro, for the Imperial Property Investment Company, Ltd., eight houses, Glasslyn-road, Crouch End.

Islington.—A new 9-in. pipe sewer 340 ft. in length is to be substituted for the old 18-in. brick barrel sewer in Grange-road at an estimated cost of 265*l.*

Lambeth.—Repairs are to be carried out to a portion of the carriageway in Knight's-hill at an estimated cost of 150*l.*

Poplar.—The following roads, among others, are to be repaved or repaired during the quarter to end September next at the following estimated costs:—Repairs to wood paving, Old Ford-road, 250*l.*; repairs to wood and sett paving, Bow-road, 300*l.*; laying lithofalt blocks on concrete in part of Oban-street, 208*l.*; ditto in part of Jeremiah-street, 192*l.*; repairs to sett paving and concrete foundation, King-street, 475*l.*; new asphalt paving on existing foundation, Cotton-street, 710*l.* An application is to be made to the London County Council for sanction to borow 1,280*l.* for extensions to electricity mains during the current financial year. The following plans have been passed:—Messrs. Walter Lawrence & Son, nurses' home, site of Nos. 97 and 99, Bow-road; Arthur Calnan, laundry block at St. Catherine's Convent, Bow-road.

Richmond.—The tender of Messrs. Soole has been accepted for the erection of a ferro-concrete footbridge at Kew Gardens Station at 715*l.* Plans submitted by the Borough Surveyor for making-up part of High Park-road at an estimated cost of 446*l.* and Spring Grove-road at 355*l.* have been approved, and application is to be made to the Local Government Board for sanction to borrow to cover the cost. Plans have been passed by Messrs. Worsfold & Hayward for eight new houses, Ennerdale-road; also for Messrs. Scott & Williams for additions to 24, Cumberland-road.

Stepney.—A plan has been passed for Messrs. Boreham, Son, & Gladding for the erection of a block of shops with flats over on the north side of Oxford-street.

Tottenham.—The following plans have been passed:—Mr. W. R. Cruse, four houses, Westbury-avenue; Mr. H. Lebus, extensions to Finsbury Cabinet Works, the Hale; Tottenham and Edmonton Gas Company, extensions to offices, High-road. A plan has been lodged by the British Braids and Bootlaces, Ltd., for extensions to Torley's factory, Ashley-road.

Wandsworth.—The tender of Mr. Thomas Adams has been accepted at 1,232*l.* for paving Longmead-road, Tooting, and constructing the footpaths with Aberdeen adamant paving. The Council has also accepted the tender of Messrs. E. Parry & Co. at 875*l.* for paving part of Mandrake-road, Balham, and constructing the footpaths with Victoria indurated paving. Tenders are to be invited for paving part of Edgeley-road, Clapham North. Messrs. Wm. Griffith & Co.'s tender at 4,335*l.* has been accepted for woodpaving and other works at Clapham Common, North Side. The following plans have been passed:—Messrs. Woodley Bros., office, Wimbledon Park-road, Southfield; Messrs. Withers & Meredith, church hall, Streatham High-road; Mr. G. A. Gale, motor house, Luttrell-avenue, Putney; Mr. W. J. Renshaw, St. Michael's, school buildings, corner of Granville-road and Viewfield-road, Southfield; Messrs. Swan Bros., additions, Nos. 44 and 46, Balham High-road; Mr. J. Parsons, additions to St. Peter's Hall, Manor-street, Clapham North; Mr. J. C. Radford, four shops, High-street, Wandsworth, and five houses, Broomhill-road, Southfield; Mr. W. A. Stedman, laundry, etc., rear 197, Brixton-hill, Streatham; Messrs. H. Wakeford & Sons, dairy premises, High-street, Clapham; Messrs. Swain & Selley, four houses, Tooting Bec-road, Balham.

Watford.—Plans have been passed by the Rural District Council for Mr. W. G. Taylor for an office and store at "Lonsdale," Christ-church-crescent; also for Vicar and Churchwardens for alterations and additions to the parish church. The Urban District Council has passed the following plans:—Mr. E. Woodfield, showroom, Whippendell-road; Mr. T. W. Chant, motor garage, Clarendon Lodge, Clarendon-road; Messrs. Stimpson, Lock, & Vince, offices, Aldenham-road; Messrs. Clutterbuck, alterations to Victoria Inn, Chalk Hill; Mr. D. Eames, four houses, Whippendell-road; Mr. E. Fulks, two pairs of houses, Oxhey-avenue; Palace Theatre Company, alterations and additions, Palace Theatre.

West Ham.—The following plans have been passed:—Mr. W. Jacques, additions and alterations to school, Colegrave-road, also school, Water-lane, Stratford; Mr. H. Brickell, additions and alterations to 252, Barking-road, Canning Town; Mr. M. Levy, additions and alterations to 138 and 139, Victoria Dock-road, Canning Town; Messrs. W. & T. R. Milburn, additions and alterations, Berwick House, Broadway, Stratford; Mr. M. W. Hudson, blouse factory, Maitland-road, Stratford; Mr. E. J. Hosking, additions and alterations, 153, The Grove, Stratford; Mr. A. Bothwell, shop and house, Victoria Dock-road, Canning Town; Mr. J. H. Gladwell, alterations, Freemasons' Tavern, Victoria Dock-road, Custom House; Messrs. Venesta, Ltd., saw-mills shed at their premises in North Woolwich-road, Silvertown. A plan has been lodged by Messrs. Dunn & Watson for a factory in Cook's-road, Stratford.

Wimbledon.—The following plans have been passed:—Mr. H. W. Rickard, eight houses, Pepys-road; Mr. R. J. Thomson, fifty-two houses, Crompton-road. The following plans have been lodged:—Temperance Billiards Halls, Ltd., billiard hall, Merton-road; Messrs. J. Burges & Sons, corrugated iron church, Faraday-road; Messrs. Holloway Bros., hospital, Thurston-road.

Woolwich.—Electricity mains are to be extended at an estimated cost of 126*l.* A portion of the 15-in. pipe sewer in Eglinton-road is to be relaid at an estimated cost of 280*l.* The following plans have been passed:—Messrs. Scoles & Raymond, the Presbytery, Basingstoke, church, High-street, Eltham; Mr. T. H. Hutchings, Hammerwood, Shooters Hill, six houses, Glenshiel-road, Eltham; Mr. J. J. Bassett, 121, Earlshall-road, Eltham, on behalf of Mr. A. C. Corbett, sixteen houses, Dumbreck and Dunvegan roads, Eltham.

Lewisham.—Referring to our notice under this heading in our last issue (page 24), the name of the builder whose tender was accepted for alterations at the Town Hall should be Mr. F. W. Loasby, and not Lowesby, as was announced in error.

FOREIGN AND COLONIAL.

Openings for Concrete Machinery.

The American Consul in Johannesburg reports that concrete mixers are now quite essential to builders and contractors in South Africa. Practically all the machines in the Transvaal are of American manufacture, and the Consul says that, as unusual activity is likely to prevail in the building trade for the next few years, there is every probability that concrete mixers will find a ready sale. The hint is one that we hope will not be lost on British makers of such plant.

The American Consul at Dundee reports that machinery is rarely used for mixing concrete in Scotland, largely owing to the fact that the sale of concrete mixers has never been pushed there. Hence he recommends Scotland as a likely field for American enterprise. As the use of reinforced concrete is making rapid headway in North Britain, and various public works involving the employment of concrete on a large scale are now in contemplation, some of our readers may find it advantageous to strengthen their representation in Scotland.

Metal Partition Walls, Germany.

It appears from a report to his Government by the United States Consul-General at Berlin that most of the inner partition walls used in buildings in that city consist of a heavy iron wire screen, on either side of which are layers of coke-ash mortar. The walls are apt to get out of plumb, and will not hold nails satisfactorily; and, as in making the mortar cattle-hair, jute, and hemp refuse are used, it sometimes disintegrates, causing the wall to crumble and sections to fall out. A good metal partition wall should therefore, says the Consul-General, find a market in Germany, provided that it was not too thick, and that the cost was not very much greater than that of the ordinary wall. Economy of space is looked for by the German builder. The authorities require that all outside and supporting walls shall have a thickness of at least 36 cms. (14·173 in.), and hence partition walls are generally limited in thickness to 10 cms. (3·937 in.), as they are not required to support great weights. The coke-ash walls cost about 3·20 marks per square metre (about 2s. 8d. per square yard), but builders would pay more for a wall of satisfactory construction. Prices should be quoted in marks per square metre f.o.b. German port.

Building Material, Austria-Hungary.

The following particulars of projected works in Austria-Hungary are extracted from the *Oesterreichischer Zentral-Anzeiger* (Vienna):—The city authorities of Budapest have decided to proceed with the erection of ten school buildings at a total cost of 6,180,000 kronen (257,500*l.*). The Budapest Spa authorities ("Heilbäderkommission") have accepted the plans for the erection of an hotel containing 100 rooms; the cost is estimated at 1,600,000 kronen (65,700*l.*), and work is to be commenced at once. The "Militär-Versicherungsgesellschaft" has decided to commence operations in the autumn of 1913 for the erection of a palatial building in Budapest at the corner of Karlsring and Dohánygasse; the cost is assessed at 5,000,000 kronen (208,000*l.*).

Building Material, Switzerland.

The *Feuille Fédérale Suisse* of June 28 contains a decree opening in favour of the Federal Council credits amounting to 837,000 francs (33,480*l.*) for the purpose of enlarging the ordnance factory at Berne, and for its equipment with the requisite additional machinery.

PATENTS.

APPLICATIONS PUBLISHED.*

11,858 of 1910.—James Gordon: Flush-bolts.

14,287 of 1910.—Charles Leslie Newland: Water supply of flushing cisterns.

15,007 of 1910.—William Yates Lambert and Eugene Ernest Navone: Water-waste preventors for water-closets, lavatories, and other like purposes.

16,244 of 1910.—William Yates Lambert and Eugene Ernest Navone: Fasteners for sliding window and like sashes.

16,691 of 1910.—William Richard Smart: Manufacture of bricks.

16,693 of 1910.—W. B. Haigh & Co., Ltd., and George John William Gruban: Wood-working machinery.

28,683 of 1910.—Otto Wimmer: Speed-controlling device for motor-driven sawing machines.

30,035 of 1910.—Ernst Eberhard Hippe: Process for the manufacture of artificial stone.

23 of 1911.—Samuel Dunn: Connecting door-knobs or handles to and adjusting them on their spindles.

889 of 1911.—The Metal Jointing Company, Ltd., and Thomas Harden: Tools for cutting pipe-ends to form spigot and socket joints.

1,716 of 1911.—Otto Wilhelmi: Apparatus or devices for climbing masts, poles, and the like.

2,518 of 1911.—J. & C. G. Bolinders Mekaniska Verkstads Aktiebolag and Adolf Julius Tenow: Sawing machines and the like.

3,804 of 1911.—James Johnson Frazer: Dwelling-house, school, or other like building or structure.

3,945 of 1911.—George Hüsing: Safety railing for windows adapted to be used as fire-escape.

4,239 of 1911.—Frederick Joseph Watkinson: Automatic window-sash lock.

5,805 of 1911.—Murtaugh James Houghton: Extension pieces for firegrates.

8,100 of 1911.—Heinrich Gustav Hodermann: Construction of buildings for business purposes.

SOME RECENT SALES OF PROPERTY:

ESTATE EXCHANGE REPORT.

June 13.—By JAMES ROGERS.

Bradwell-on-Sea, Essex.—Peakes Farm and two cottages, 27 a. 1 r. 20 p., f.	£1,705

By BOULTON & COOPER.

Kirby Grindalythe, Yorks.—Low Farm, 330 a. 3 r., f.	6,000

By DRAWBRIDGE & ANSELL.

Ripe, Sussex.—Little Lulhams, 105 a. 2 r. 23 p., f.	1,760
Streat, Sussex.—Malt House, 15 a. 0 r. 29 p., f.	800

By J. KITTOW & SON.

North Petherwin, Devon.—Farms, small holdings, etc., 4,76[illegible] acres, f. (in lots)	83,926

June 14.—By HUNT & PEDDAR.

Great Ashfield, Suffolk.—Kiln Farm, 173 a. 3 r. 25 p., f.	4,290

By ROYCE.

Barkby, Leicester.—Agricultural land, 255 acres, f.	9,695

By WM. PEARSE & SON.

Ugborough, Devon.—Haye Farm, 65¼ acres, f.	4,525
Ludbrooke Smithy and 13½ acres, f.	900
Pasture land, 17 acres, f.	1,550

RECENT SALES—*continued on page 53.*

* All these applications are in the stage in which opposition to the grant of Patents upon them can be made.

List of Competitions, Contracts, etc.

For some Contracts still open, but not included in this List, see previous issues. Those with an asterisk (*) are advertised in this Number: Competitions, iv.; Contracts, iv. vi. viii. x.; Public Appointment, xvi.; Auction Sales, xxii.

Certain conditions beyond those given in the following information are imposed in some cases, such as: the advertisers do not bind themselves to accept the lowest or any tender; that a fair wages clause shall be observed; that no allowance will be made for tenders; and that deposits are returned on receipt of a bona-fide tender unless stated to the contrary.

The date given at the commencement of each paragraph is the latest date when the tender, or the names of those willing to submit tenders, may be sent in.

*** It must be understood that the following paragraphs are printed as news, and not as advertisements; and that while every endeavour is made to ensure accuracy, we cannot be responsible for errors that *may* occur.

Competitions.

JULY 31. — **Lowestoft.** — SCHOOL. — The Lowestoft Education Committee invite designs for an elementary school for 500 boys at Romanhill. Three premiums are offered: 20*l.*, 10*l.*, and 5 guineas. See advertisement in issue of June 16 for further particulars.

JULY 31. — **Wellington.** — NEW PARLIAMENT BUILDINGS.—Premiums of 1,000*l.*, 500*l.*, 300*l.*, and 200*l.* are offered for the competitive designs. Particulars from the Minister of Public Works, Wellington, New Zealand.

JULY 31.—IDEAL COUNTRY HOUSE.—100*l.* offered by the *Daily Mail*, Carmelite House, E.C., for designs for country house, to cost from 900*l.* to 1,100*l.* Mr. E. C. P. Monson, F.R.I.B.A., Mr E. J. Sadgrove, F.R.I.B.A., and others, assessors.

AUGUST 8. — **Egremont.**—LAYING-OUT SCHEME.—Premiums of 40*l.* and 10*l.* are offered by the Egremont U.D.C. for lay-out scheme. Particulars from the Town Surveyor, Egremont.

AUGUST 15.—**Berne.**—MONUMENT.—Designs for the erection of a monument at Berne to celebrate the foundation of the International Telegraph Union. Conditions may be seen in the library of the Royal Institute of British Architects.

SEPTEMBER 12-25.—**Athens.**—COURT OF JUSTICE.—An international competition is instituted by the Ministry of the Interior, for the erection of Court buildings, to cost 160,000*l.* The *Official Gazette* may be seen at the Library of the R.I.B.A.

SEPTEMBER 16. — **Manchester.** — LIBRARY AND ART GALLERIES.—Limited to the ten selected competitors in the first competition. See issue of June 23, p. 780.

OCTOBER 30.—**Holland.**—STAINED GLASS WINDOW.—Designs are invited for a stained glass window to be erected in the University at Groningen. See advertisement in issue of June 9 for further particulars.

OCTOBER 31. — **Marylebone.** — NEW MUNICIPAL BUILDINGS.—Premiums of 100*l.*, 75*l.*, 50*l.* The assessor is Mr. Henry T. Hare, F.R.I.B.A. See advertisement in this issue

NOVEMBER 1. — **City of St. Petersburg.** — MONUMENT TO ALEXANDER II.—Particulars in our issue of August 13, 1910.

DECEMBER 29. — **Glasgow.** — DESIGN FOR A BRIDGE.—Designs are invited (Alexander Thomson Travelling Studentship) for a bridge. Preminums of 60*l.* and 20*l.* are offered. See advertisement in issue of December 24 for further particulars.

JANUARY 31, 1912. — **Australia.** — DESIGNS FOR FEDERAL CAPITAL CITY.—The Government of the Commonwealth of Australia invite competitive designs for the laying out of this Federal capital city. See advertisement in issue of July 7 for further particulars.

NO DATE. — **Nottingham.** — BAPTIST CHURCH AND PREMISES.—Limited to Nottingham architects. Particulars from Messrs. Rorke & Jackson, solicitors, King-street, Nottingham.

NO DATE.—**Salford.**—Extension of office accommodation on workhouse site at Eccles New-road. Premiums 20*l.* and 10*l.* Particulars from the Board of Guardians, Salford.

Contracts.

BUILDING.

The date given at the commencement of each paragraph is the latest date when the tender, or the names of those willing to submit tenders, may be sent in.

JULY 15. — **Kendal.** — HOME. — Building a nurses' home at the Westmorland Consumption Sanatorium, Meathop. Plans and specifications seen, and quantities from Mr. John Hutton, M.R.S.I., architect, Kendal.

JULY 15. — **Paignton.**—DRILL-HALL.—For erection of a drill-hall and offices. Plans and specification seen, and quantities, on deposit of 5*l.* 5s., from Mr. F. A. Clark, architect, 83, Old Town-street, Plymouth.

JULY 17. — **Abercarn.**—DWELLINGS.—Erection of ninety-six cottages at Cwmcarn. Plans, specifications, etc., with Mr. J. Williams, Engineer and Surveyor to the Council. Deposit of 2*l.* 2s.

JULY 17. — **Burnley.** — POLICE-STATION.—Erection of a county police-station at Cliviger. Plans seen, and quantities, on deposit of 2*l.*, from Mr. Henry Littler, County Architect, 16, Ribblesdale-place, Preston.

JULY 17. — **Southend.** — CONVENIENCE.—Erection of a convenience, shelter, and store. Plans, specifications, etc., seen, and quantities, on deposit of 1*l.* 1s., from Mr. E. J. Elford, Borough Engineer.

JULY 17. — **Treharris.** — ADDITIONS, ETC.—Alterations and additions to Ty Cook Farm. Plans and specifications with Mr. T. Edmund Rees, architect, Merthyr Tydfil.

JULY 17.—**Treharris.**—SHOP, ETC.—Erection of new shop premises. Plans and specification with Mr. T. Edmund Rees, architect, Merthyr Tydfil.

JULY 17. — **Troed-y-rhiw.** — COTTAGES, ETC.—Erection of five pairs of semi-detached cottage villas and twenty or more cottages. Plans and specifications with Mr. T. Edmund Rees, architect, Merthyr Tydfil.

JULY 17.—**York.**—ROOM.—Erection of a new battery room at the Electric Lighting Station. Plans seen, and specification and quantities, from Mr. F. W. Spurr, City Engineer, Guildhall, York, on deposit of 1*l.* 1s.

JULY 17. — **Yorks.** — ADDITIONS, ETC.—Alterations and additions at Gargrave Council School. Plans seen, and specifications and quantities from Mr. B. Thornton, Education Offices, Town Hall, Skipton.

JULY 18. — **Bacup.**—RECONSTRUCTION.—For reconstruction of buildings, etc., at the Central Council Schools. Plans seen, and specification and quantities from Mr. W. H. Elce, Borough Engineer, Municipal Offices, Bacup. Deposit of 1*l.*

JULY 18. — **Bognor.** — COTTAGES.—Erection of twelve workmen's cottages. Specification at the office of the Council's Surveyor, 66, High-street, Bognor. Mr. Henry Layton Staffurth, Clerk to the Council, Council Offices, Bognor.

JULY 18.—**Boylestone.**—COTTAGE.—Erection of a cottage and alterations to farm buildings at the Myers Farm. Quantities from, and drawings and specification with, Mr. M. Hunter, Architect and Surveyor, Belper.

JULY 18. — **Cornwall.** — SHED. — The Great Western Railway invite tenders for the erection of a goods shed at Fowey. Plans and specification seen, and quantities from the Engineer at Plymouth, North-road Station.

JULY 18.—**Edinburgh.**—COTTAGE.—Erection of a double cottage at Gladhouse Reservoir. Plans and specifications from Mr. A. E. Horsfield, architect, 88A, George-street, Edinburgh.

JULY 18. — **Keynsham.** — ALTERATIONS.—For alterations to the Keynsham Workhouse for office accommodation. Plans, specifications, etc., seen, and forms of tender from Mr. Henry M. Bennett, Surveyor to the Council, 36, Corn-street, Bristol.

JULY 18.—**London.**—WALL.—Pulling down the existing boundary retaining wall and erection of a new brick retaining wall and other works at the Crouch End School, Park-road, Crouch End. Specification and quantities from the Borough Engineer and Surveyor, Municipal Offices, Highgate, N.

JULY 18.—**Swansea.**—ROOMS, ETC.—Provision of a new entrance and exit and new cloakrooms at St. Thomas Council School. Mr. A. W. Halden, Clerk to the Committee, Education Offices, 9, Grove-place, Swansea. Deposit of 3*l.* 3s.

JULY 19.—**Aberystwyth.**—CLUB-HOUSE.—Erection of a club-house. Plans and specifications from Mr. G. T. Bassett, A.R.I.B.A., architect and surveyor, Aberystwyth.

JULY 19.—**Ammanford.**—HALL.—Erection of a Public Hall. Mr. D. Thomas, architect, 10, Quay-street, Ammanford. Deposit of 2*l.* 2s.

JULY 19. — **Wells.**—ADDITIONS.—For additions and alterations at the boys' school. Plans and specifications seen, and quantities, on deposit of 1*l.* 1s., from architect, Mr. A. J. Pictor, A.R.I.B.A., Bruton, Somerset.

JULY 19. — **Woolwich.** — EXTENSION. — Office extension building work at the Workhouse, Plumstead. Drawings and information from the architects, Messrs. Church, Quick, & Whincop, William-street, Woolwich. Deposit of 1*l.* 1s.

JULY 20.—**Acton.**—SCHOOL.—Erection of a new school. Drawings and specification seen, and quantities, on deposit of 2*l.* 2s., from Mr. F. A. Everitt, Secretary, Education Department, Council Offices, Acton, W.

JULY 20. — **Croydon.**—CONCRETE WORK.—Constructing in concrete the walls and channels of a new contact bed. Plans and specification with the Surveyor, Mr. R. M. Chart, F.S.I., Council Offices, Katharine-street, Croydon. Deposit of 2*l.*

JULY 20.—**Durham.**—LODGE.—For building a porter's lodge at the isolation hospital, Norman's Riding. Plans and specification at the Council Offices, Blaydon.

JULY 21. — **Brighton.** — LAVATORY.—Construction of an underground lavatory. Specification from the Borough Surveyor, Town Hall, Brighton.

JULY 21.—**Ebbw Vale.**—REBUILDING.—For the rebuilding of business premises at Beaufort-street, Brynmawr. Plans and specification with Mr. Hy. Waters, M.I.A., architect and surveyor, New-street-chambers, Ebbw Vale.

JULY 21.—**Norfolk.**—IMPROVEMENTS, ETC.—For alterations and improvements at Aslacton Council School. Mr. Thos. A. Cox, Secretary, Education Offices, Shirehall, Norwich. Deposit of 1*l.* 1s.

JULY 21. — **Romford.** — ALTERATIONS.—Execution of alterations at the Council offices. Specifications with the Surveyor to the Council, Market-place, Romford.

JULY 21.—**Warrington.**—FITTINGS.—For sanitary fittings and the cloakroom fittings at Evelyn-street Council school. Specifications from the architect, Mr. T. A. Buttery, Exchange-buildings, Queen-street, Morley.

JULY 21.—**Yorkshire.**—SCHOOL.—Erection of a school at Lepton. Plans seen, and specifications, with quantities, from the Education Architect, County Hall, Wakefield. Deposit of 1*l.*

JULY 22.—**Bangor.**—ROOM.—Erection of a new schoolroom, classrooms, and vestries adjoining the Tabernacle Chapel. Drawings seen, and quantities from the architects, Messrs. Cubitt & Manchipp, High-road, Loughton, Essex, or at 298, High-street, Bangor. Deposit of 1*l.* 1s.

JULY 22.—**Lisburn.**—SCHOOLS.—Erection of school buildings. Plans and specifications seen, and bill of quantities, on deposit of 1*l.* 1s. to the architect, Mr. James Hunter, Beechwood, Lisburn.

JULY 22. — **Windsor.** — ALTERATIONS.—Alterations to the sanitary arrangements at the Union Workhouse at Old Windsor. Plan and specification with the Master of the Workhouse

JULY 24.—**Andover.**—POLICE-STATION.—Alterations and new detached police quarters at Andover Police-station. Plans and specifications with the County Surveyor, The Castle, Winchester. Deposit of 2*l.* 2s.

JULY 24. — **Pentrepoeth.** — SCHOOL. — For removing the two galleries and replacing the floors at the infants' school. Specification with Mr. T. Walters, Clerk, 31, Quay-street, Carmarthen.

JULY 24.—**St-y-Nyll.**—COTTAGES.—Erection of two cottages. Plans and specifications at the offices of Mr. W. E. R. Allen, Deputy-Clerk, Glamorgan C.C. Offices, Westgate-street, Cardiff.

* JULY 24.—**Westerham, Kent.**—COTTAGE, ETC.—The Metropolitan Water Board invite tenders for a cottage, etc., at Westerham-hill, Kent. See advertisement in this issue for further particulars.

* JULY 24. — **Weymouth.**—SCHOOL.—The Joint Secondary School Committee of Weymouth and Melcombe Regis invite tenders for a secondary school. See advertisement in this issue for further particulars.

JULY 25. — **Bexley Heath.** — CLOCK TOWER.—Erection of a clock tower in Market-place. Plans and specification from Mr. W. M. Epps, architect, 8, Ethronvi-road, Bexley Heath. Deposit of 1*l.* 1s.

JULY 25. — **Exeter.**—ALTERATIONS.—For alterations at No. 266, High-street. Quantities from Mr. R. M. Challace, architect and surveyor, 14, Bedford-circus, Exeter.

* JULY 25. — **Harold Wood.**—NEW BUILDINGS, ETC.—The West Ham B.C. invite tenders for new dormitory buildings and convalescent home at Harold Wood, Essex. See advertisement in this issue for further particulars.

JULY 25.—**London.**—TRAMWAYS.—The London C.C. invite tenders for the roadwork and plate-laying required for the reconstruction on the conduit system of existing horse tramways in Green-lanes, Mildmay-park, and Southgate-road, and of the electric tramway in Seven Sisters-road, these works forming the subject of one contract. And for the construction for electrical traction, mainly on the overhead trolley system, of their authorised tramways from Brixton to Herne Hill. Also for the paving works of the street widenings on the above routes. Specifications, quantities, drawings, etc., from the Chief Engineer of the Council, Mr. Maurice Fitzmaurice, C.M.G., at the County Hall, Spring-gardens, S.W. Deposit of 5*l.* for each contract.

* JULY 26.—**Hammersmith.**—BOILER-HOUSE.—The Hammersmith B.C. invite tenders for the erection of additions to boiler-house. See advertisement in this issue for further particulars.

JULY 26. — **London.**—SHELTERS, ETC.—Erection of lavatory accommodation and shelters at Wormholt Park, Hammersmith. Plans seen, and specification from Mr. H. Mair, Borough Surveyor, Town Hall, Hammersmith, W.

JULY 27.—**Amesbury, Wilts.**—POLICE-STATION.—Erection of a county police-station. Plans and specification seen, and quantities, on deposit of

BUILDING—*continued.*

The date given at the commencement of each paragraph is the latest date when the tender, or the names of those willing to submit tenders, may be sent in.

2*l.* 2s., from Mr. J. George Powell, County Surveyor, Trowbridge.

✱ JULY 27.—**London, W.**—SUNDRY BUILDINGS, ETC.—The St. Marylebone B.C. invite tenders for sundry buildings, roofs, bins, etc., at the depôt, Richmond-street, Edgware-road. See advertisement in this issue for further particulars.

JULY 28. — **Cheshire.** — SCHOOL.—Erection of high school for girls at West Kirby. Plans and specifications seen, and quantities, on deposit of 2*l.*, from Mr. H. Beswick, County Architect, Newgate-street, Chester.

✱ JULY 28. — **Merton.**—OFFICES.—The Merton U.D.C. invite tenders for erection of additional offices. See advertisement in this issue for further particulars.

✱ JULY 28. — **West Kirby.** — SCHOOL. — The Cheshire Education Committee invite tenders for erection of a new high school for girls at West Kirby. See advertisement in this issue for further particulars.

JULY 30.—**Treboeth.**—ADDITIONS, ETC.—Alterations and additions to Moriah Chapel. Plans and specifications seen, and quantities from Mr. William Matthews, architect, 151, Bryngelly-row, Treboeth.

✱ AUGUST 2.—**Sholing, Hampshire.**—ALTERATIONS.—The Southampton C.C. invite tenders for alterations to boys' and girls' school at Sholing. See advertisement in this issue for further particulars.

NO DATE.—**Beeston.**—SCHOOL.—Erection of a new Catholic school. Plans and quantities from Mr. W. H. Herbert Marten, architect, 3, Cookridge-street, Leeds.

NO DATE.—**Crosland Moor.**—HOUSE.—Erection of a dwelling-house. Quantities from Messrs. J. B. Abbey & Son, architects and surveyors, 34a, New-street, Huddersfield.

NO DATE. — **Erdington.** — TRAMWAYS.—Construction of Tramway No. 2, comprising the construction of the permanent way, including copper bonding, wood block paving, and other works. Mr. Herbert H. Humphries, Engineer to the Council, Council House, Erdington, Birmarthen.

NO DATE. — **Hebburn.** — ADDITIONS.—For proposed additions to the Miners' Hall. Quantities from Mr. Geo. R. Smith, A.R.I.B.A., architect, Waterloo-chambers, South Shields.

NO DATE.—**Longwood.**—HOUSES.—Erection of four dwelling-houses. Mr. Sanderson M. Balmford, architect, Longwood.

NO DATE. — **Merthyr Tydfil.**—BOILER-HOUSE, ETC.—Erection of boiler-house, two fives courts, and general improvement to yards, at the intermediate school. Particulars from the Deputy-Surveyor, Town Hall, Merthyr Tydfil.

NO DATE.—**Normanton.**—HEADQUARTERS.—New headquarters. Messrs. Simpson & Firth, architects and surveyors, Southgate, Wakefield.

NO DATE. — **Wilts.**—SCHOOL.—Erection of a new school at Durrington. Plans and specification with the architect, Mr. G. L. W. Blount, 39, High-street, Salisbury. Deposit of 1*l.* 1s.

ENGINEERING, IRON, AND STEEL.

JULY 18.—**London, N.**—BOILER.—Supply of a new sectional boiler in place of existing boiler of the heating apparatus at the North Harringay School, Falkland-road, Harringay. Specification from Mr. A. W. Allen, Secretary for Education, 206, Stapleton Hall-road, Stroud Green, N.

JULY 20. — **Lisburn.** — GASWORKS.—Construction and erection of a retort stack, retort stack mountings, etc. Specification and drawings seen, and quantities, on deposit of 2*l.* 2s., from the engineers, Messrs. T. Newbigging & Son, 5, Norfolk-street, Manchester.

JULY 22. — **Barlby.**—PUMPING STATION.—Construction of a new pumping station. Plans seen, and specification and quantities, on deposit of 5*l.*, from the engineer, Mr. E. J. Silcock, Sanctuary House, Tothill-street, Westminster, and 10, Park-row, Leeds.

JULY 24. — **Westbury.** — RESERVOIR, ETC.—Erection of a pumping station and reservoir, the supply of cast-iron pipes, etc. Plans and specifications seen, and quantities, on deposit of 2*l.* 2s., from Mr. W. H. Stanley, A.M.Inst.C.E., Market House-chambers, Trowbridge, Engineer to the Council.

JULY 25. — **Geiriconydd.** — WATER SUPPLY.—Construction of a reservoir and other works. Plans and specifications seen, and quantities, on deposit of 2*l.* 2s., from the Engineer, Mr. E. Evans, A.M.Inst.C.E., 8, Castle-street, Carnarvon.

JULY 25. — **Heacham.**—WATER WORKS.—Erection of a water tower and tank and the laying of main pipes and appendages. Drawings and specifications seen, and quantities, on deposit of 10s. 6d., from the engineer, Mr. E. H. Stevenson, 38, Parliament-street, Westminster.

JULY 25.—**New Hunstanton.**—WATERWORKS.—Construction of waterworks. Drawings and specifications seen, and quantities, on deposit of 10s. 6d., from the engineer, Mr. E. H. Stevenson, 38, Parliament-street, Westminster.

JULY 27.—**Ipswich.**—WELL.—For sinking a 10-ft. diameter cast-iron lined well. Plans, specification, and schedule of prices, on deposit of 1*l.* 1s., from Mr. C. W. S. Oldham, Engineer, Ipswich Corporation Waterworks, Waterworks Offices, Ipswich.

JULY 28.—**Brittas, Co. Dublin.**—DISINFECTOR.—Erecting, and leaving ready for use, at the Crooksling Sanatorium, a Washington-Lyon high-pressure steam disinfector. Chairman, Dublin Joint Hospital Board, Municipal Buildings, Dublin.

JULY 29. — **East Cowes.** — BORE-TUBE.—For sinking a bore-tube at Waterworks. Specifications and particulars from the Engineer to the Council, Mr. Albert E. Barton, Town Hall, East Cowes. Deposit of 1*l.* 1s.

AUGUST 10. — **St. John, N.B.** — HARBOUR WORKS.—Construction of a breakwater, wharves, dry dock, and ship repairing plant. Specifications at the Commercial Intelligence Branch of the Board of Trade, 73, Basinghall-street, E.C.

AUGUST 15.—**Derbyshire.**—RESERVOIRS.—Construction of two brick-covered service reservoirs at Sparken Hill, Worksop, and Barlborough. Drawings and specification seen, and quantities, on deposit of 10*l.* 10s., from the engineers, Messrs. G. & F. W. Hodson, Bank-chambers, Loughborough.

AUGUST 15. — **Stockholm, Sweden.**—RAILWAY.—Construction of a new line between Enstaberga and Aby. Drawings, specifications, etc., through the British Vice-Consulate, Nyköping, Sweden. Deposit of 3*l.*

FURNITURE, PAINTING, MATERIALS, etc.

JULY 15.—**Nottingham.**—FITTINGS.—For supplying new water-closet fittings and lavatory basins at schools, for the Education Committee. Plans seen, and specifications and quantities from the City Architect, Mr. F. B. Lewis, Guildhall, on deposit of 1*l.* 1s.

JULY 15.—**Nottingham.**—PAINTING, ETC.—For cleaning and painting at the Council schools. Specifications, quantities, and forms of tender from Mr. F. B. Lewis, City Architect, Guildhall, on deposit of 1*l.* 1s.

JULY 17. — **Norwich.**—PAINTING.—For colouring, painting, whitewashing, etc., various schools. Specifications and quantities, on deposit of 5s., from Mr. Chas. J. Brown, Architect and Surveyor, Cathedral Offices, The Close, Norwich.

JULY 18. — **Derby.**—PAINTING.—For cleaning, painting, and decorating at the Public Offices, Heanor. Specifications with Mr. J. Holbrook, Surveyor, Public Offices, Heanor, Derby.

JULY 18.—**London.**—PAINTING, ETC.—For painting, colouring, etc., interior and exterior of the Chapel End Schools, Walthamstow. Specification with Mr. H. Prosser, Architect to the Committee, Education Committee Offices, High-street, Walthamstow.

JULY 18. — **Portsmouth.** — DECORATING.—Redecorating interior of blocks B and D at the Infectious Diseases Hospital, Milton. Specification seen, and form of tender from the Borough Engineer, Town Hall, Portsmouth.

JULY 18. — **Rochdale.**—PAINTING.—For painting at Cheetham-street conveniences. Particulars from the Borough Surveyor.

JULY 19. — **Lancs.** — PAINTING, ETC.—Internal decoration and outside painting of the Great Harwood Western Council Schools. Specifications with Mr. W. Sagar, White House, Rishton.

JULY 20. — **Kirkburton.**—PAINTING.—Painting the isolation hospital. Particulars from Mr. G. W. Smith, Clerk to the Committee, 23, John William-street, Huddersfield.

✱ JULY 21.—**Ashford.**—PLANING FLOORS.—The Managers of the W. London District School invite tenders for planing floors of the dormitories and infirmary wards. See advertisement in this issue for further particulars.

✱ JULY 21. — **Foots Cray.** — PAINTING, ETC.—The Kent Education Committee invite tenders for painting and repairs to Longlands Council School, Foots Cray. See advertisement in this issue for further particulars.

JULY 21.—**Great Yarmouth.**—PAINTING, ETC.—For painting and alterations at various schools. Specifications from the Borough Surveyor, Town Hall, Great Yarmouth.

JULY 21.—**Lowestoft.**—PAINTING, ETC.—For painting and repairing work in various schools. Specifications seen, and particulars from Mr. G. T. Knights, 44, Milton-road, Lowestoft.

JULY 22. — **Twickenham.** — PAINTING.—For cleaning, distempering, and painting at the Trafalgar Public Elementary Schools. Particulars from Mr. F. W. Pearce, Surveyor to the Council, Town Hall, Twickenham.

✱ JULY 25. — **London, N.W.**—PAINTING, ETC.—The Willesden D.C. invite tenders for cleansing and painting works at Public Offices and Education Offices, Dyne-road, Kilburn, N.W. See advertisement in this issue for further particulars.

✱ JULY 25. — **London, W.C.** — PAINTING.—The Guardians of St. Giles-in-the-Fields and St. George, Bloomsbury, invite tenders for painting external ironwork of Workhouse in Endell-street, W.C.; also Guardians' Offices and Receiving Home for Children and Nurses' Home in Broad-street, W.C. See advertisement in this issue for further particulars.

✱ JULY 28. — **Blackpool.** — FURNITURE.—The Blackpool B.C. invite tenders for furnishing the new Central Library and Art Gallery. See advertisement in this issue for further particulars.

✱ JULY 28. — **Merton.** — PAINTING, ETC.—The Merton U.D.C. invite tenders for painting and decorating offices. See advertisement in this issue for further particulars.

JULY 28. — **Wimborne.** — FENCING.—For the supply and erection of iron fencing and gates at the extension to Wimborne Cemetery. Specification and forms of tender from Mr. V. C. A. Munckton, A.M.I.Mun.E., Borough Offices, Wimborne.

✱ JULY 29. — **London, S.E.** — WIRE GUARDS, ETC. — The Metropolitan Asylums Board invite tenders for supplying and fixing wrought-iron tubing, wire and other guards, at Park Hospital for Children, Hither Green, Lewisham, S.E. See advertisement in this issue for further particulars.

✱ AUGUST 1. — **Epsom Union.** — PAINTING, VARNISHING, ETC.—The Epsom Guardians invite tenders for whitewashing, painting, varnishing, etc., at the Workhouse infirmary. See advertisement in this issue for further particulars.

✱ AUGUST 1. — **Isleworth.** — PAINTING, ETC.—The Guardians of the Brentford Union invite tenders for repairs, cleansing, painting, etc., to infirmary, workhouse, offices, and schools at Isleworth, Middlesex. See advertisement in this issue for further particulars.

✱ AUGUST 2.—**London, N.E.**—PAINTING, ETC.—The Guardians of St. Leonard, Shoreditch, invite tenders for painting, cleansing, and repairs at their branch school, Lower Clapton-road, N.E. See advertisement in this issue for further particulars.

✱ NO DATE. — **Wickford.** — STREET LAMPS.—The Wickford P.C. invite particulars of lamps for use in exposed country district. See advertisement in this issue for further particulars.

ROADS, SANITARY AND WATER WORKS.

JULY 17.—**Blackburn.**—STREETS.—For making up streets. Plans and specifications seen and information from Mr. W. Stubbs, Borough Engineer, Municipal Offices, Blackburn.

JULY 17.—**Bristol.**—SEWERS.—Construction of brick and pipe sewers at Easton. Drawings seen and quantities on deposit of 2*l.*, from Mr. T. H. Yabbicom, City Engineer, 63, Queen-square, Bristol.

JULY 17. — **Dundee.** — PIPES.—Supply of 500 6-in. cast-iron pipes. Specification from Mr. George Baxter, Engineer and Manager, Water Engineer's Office, 93, Commercial-street, Dundee.

JULY 17.—**Kendal.**—WATER MAIN.—Laying of a 6-in. water main along Low Fellside. Particulars at the Gas Office, Parkside-road. W. R. Wilson, engineer and manager.

JULY 17.—**Ladybank.**—ROADS.—For repair of roads. Specification at Bailie Sime's, Royal Hotel, Ladybank.

JULY 17. — **London.** — PAVING. — For paving works in Bishop's-road, Westbourne-grove, Shirland-road, and Edgware-road. Specification from the Borough Surveyor, Town Hall, Paddington, W.

JULY 17.—**London.**—PAVING, ETC.—Making-up and paving part of Edgeley-road, Clapham North. Specification and drawings seen and forms of tender from the Borough Engineer at the Office of the New Streets Department, No. 56, East-hill, Wandsworth, S.W. Deposit of 5*l.* 5s.

JULY 17. — **Spennymoor.** — STREETS. — For making-up streets. Plans, specifications, etc., seen and forms of tender from Mr. C. R. Spencer, Surveyor to the Council, Silver-street, Spennymoor.

JULY 17.—**Wednesbury.**—STREETS.—For street works. Plan and specification seen, and forms of tender from Mr. E. Martin Scott, Borough Engineer and Surveyor, Town Hall, Wednesbury.

JULY 18.—**Brentford.**—FLINTS.—Supply of Kentish pit flints. Specification from Mr. J. W. Croxford, surveyor, at his office, Clifden House, Boston-road, Brentford.

JULY 18.—**Brislington.**—ROADS.—For making-up roads. Plans, specifications, etc., from Mr. H. M. Bennett, Surveyor to the Council, 36, Corn-street, Bristol.

JULY 18.—**Crewe.**—SEWERAGE.—Construction of sewage disposal works, etc. Plans, sections, and specifications seen, and information from Mr. G. Eaton Shore, Borough Surveyor, Earle-street, Crewe.

JULY 18.—**Holmes, Yorks.**—SEWER.—Construction of a storm-water sewer and a sewer-pumping machinery and delivery main. Plans and specifications with Mr. E. B. Martin, Borough Engineer, Town Hall, Rotherham.

JULY 19.—**Bonymaen.**—PAVING.—For paving a portion of the playground at the Industrial Schools. Particulars from the Borough Estate Office, 3, Prospect-place, Swansea.

JULY 21.—**Brighton.**—WOOD PAVING.—For relaying wood paving. Specification from the Borough Surveyor, Town Hall, Brighton.

JULY 22.—**Denny and Dunipace.**—SEWERAGE.—Construction of sewers. Plans and drawings with the Burgh Surveyor. Deposit of 10s.

JULY 22.—**Glamorgan.**—ROAD.—For construction of a new road at Holly Bush. Plans and specification seen, and form of tender from the Council's Surveyor, Mr. J. H. Jones, Blackwood, Mon. Deposit of 1*l.* 1s.

JULY 24.—**Feltham.**—GRANITE.—Supply of granite. Forms of tender from the Surveyor, Mr. G. Stevens, Town Hall-chambers, Feltham.

JULY 24.—**Keith.**—SEWERAGE.—Sewage carrier extension. Messrs. Jenkins & Marr, engineers, 16, Bridge-street, Aberdeen.

JULY 24.—**London.**—SEWERAGE.—Construction of sewers and surface-water sewers, with manholes, etc., and storm-water culvert, at North-hill, Highgate. Particulars from Mr. E. J. Lovegrove, Borough Engineer and Surveyor, Municipal Offices, Highgate.

JULY 25.—**Braintree.**—GRANITE.—Supply and delivery of broken granite. Forms of tender from Mr. H. H. Nankivell, Surveyor, Vestry Hall, Braintree.

JULY 25.—**Ealing.**—ROADS.—For the making-up of roads. Drawings and specifications seen, and quantities from Mr. Charles Jones, M.Inst.C.E., Borough Engineer, Town Hall, Ealing, W., on deposit of 10s. 6d.

JULY 25.—**Woodford.**—GRANITE.—Supply of broken granite. Particulars from Mr. William Farrington, Surveyor to the Council, Council Offices, Woodford Green, Essex.

✱ JULY 26.—**Hammersmith.**—LAVATORY AND SHELTERS. — The Hammersmith B.C. invite tenders for erection of lavatory accommodation and shelters at Wormholt Park. See advertisement in this issue for further particulars.

JULY 26.—**Ludlow.**—WATER SUPPLY.—Laying steel gravitation main. Plans and specification with the Borough Surveyor.

JULY 26.—**Soyland, Yorks.**—GRANITE.—Supply of granite. Mr. W. Whitehead, Surveyor, Council Offices, Elland-road, Ripponden.

ROADS, etc.—*continued.*

The date given at the commencement of each paragraph is the latest date when the tender, or the names of those willing to submit tenders, may be sent in.

JULY 28.—**Newmarket.**—GRANITE.—Supply of broken granite and slag. Forms of tender from Mr. S. J. Ennion, Clerk, Deva-chambers, Newmarket.

JULY 29.—**East Dereham.**—GRANITE.—Supply of broken granite. Forms of tender from the Surveyor, Mr. F. L. Burch, Theatre-street, East Dereham.

JULY 31.—**Penge.**—STREETS.—Private street works. Plans and specification seen, and quantities, on deposit of 2*l.*, from Mr. Herbert William Longdin, Surveyor, Town Hall, Anerley, S.E.

AUGUST 1.—**Markyate, Herts.**—SEWAGE.—For sewerage and sewage disposal works. Plans and specifications seen, and quantities, on deposit of 2*l.* 2s., from the engineers, Messrs. Elliott & Brown, Burton-buildings, Parliament-street, Nottingham

AUGUST 9.—**Surbiton.**—SEWAGE.—For sewerage and sewage disposal works. Drawings and specification, quantities, and form of tender from the Surveyor to the Council, Mr. Henry T. Mather, Council Offices, Ewell-road. Deposit of 10*l.* 10s.

Auction Sales.

Nature and Place of Sale.	By whom Offered.	Date of Sale.
*THE LEGGATT'S ESTATE, POTTERS BAR—At the Mart	John D. Wood & Co.	July 18
*MACHINERY, PLANT, ETC.—At Bath Buildings, Montpelier-street, Bristol	Nichols, Young, Hunt, Alder, & Co.	July 20
*FREEHOLD BUILDING PLOTS, CHISWICK—At the Mart	Tyser, Greenwood, & Co	July 21
*CORONATION ANNEXE, WESTMINSTER ABBEY	Horne & Co.	July 24
*WOOD-WORKING MACHINERY—On the Premises	J. T. Skelding & Holland	July 26
*SURPLUS FREEHOLD LANDS, HAMMERSMITH—At the Mart	Edwin Fox, Bousfield, Burnetts, & Baddeley	July 26
*FREEHOLD GROUND RENTS AND FREEHOLD LAND, MORTLAKE—At the Mart	Farebrother, Ellis, Egerton, Breach, Galsworthy, & Co.	July 27
*FREEHOLD LAND, ESSEX—At the Institute, Southend-on-Sea	T. W. Offin, jun.	July 29
*FREEHOLD BUILDING SITE, SOUTHWARK—At the Mart	F. W. Field	July 31
*FREEHOLD SITE, KENSINGTON—At the Mart	S. Walker & Son	Aug. 1

RECENT SALES—*Continued from page 53.*

By WALTER PYE.

Yarkhill, Hereford.—Castle Estate, 128 a. 1 r. 20 p., f. £5,500

By R. W. FULLER, MOON, & FULLER.

Epsom, Surrey.—Burgh Heath-rd., The Chalet, and 2 r. 15 p., f. 1,100

By WAINWRIGHTS & HEARD.

Stoke Frister, Somerset.—Stileway Farm, 99 a. 1 r. 4 p., f. 3,820
Pasture land, 9 a. 0 r. 32 p., f. 250
Templecombe, Somerset.—Manor Farm, 118 a. 3 r. 36 p., f. 6,100
Orchard land, 1 a. 3 r. 36 p., f. 175
Pasture land, 31 a. 2 r. 18 p., f. 1,000
Twelve building sites, f. 488
Pasture land, 58 a. 0 r. 27 p., f. 2,050

By HUMBERT & FLINT.

Bridgwater, Somerset.—Agricultural estate, 454 acres, f. 28,201

June 15.—By JOHN D. WOOD & Co.

Leominster, Hereford.—Outlying portions of Hampton Court Estate, 1,833 acres, f. 42,742

By ALFRED J. BURROWS.

Cranbrook, Kent.—Clay Hill Farm, 3 a. 1 r. 22 p. f. 200

By DEASON & LESTER.

Enfield.—31 and 112, Elenbridge-rd., f., w.r. 63*l.* 6s. 610

June 16.—By BIDWELL & SONS.

Ely, Cambs.—Small holdings, etc., 108 acres, f. and c. 8,763

By WINTERTON & SONS.

Curborough, Staffs.—Curborough House Farm, 135 acres, f. 4,200

June 20.—By MADDISON, MILES, & MADDISON.

Great Yarmouth, Norfolk.—21, Howard-st. South (s.), f. 380

June 30.—By DYER, SON, & HILTON.

Lee.—51 & 53, Brightfield-rd., u.t. 73 yrs., g.r. 7*l.* 15s., w.r. 58*l.* 10s. 210

By HAMPTON & SONS.

Westbury, Wilts.—Outlying portions of the Leighton Estate, 1,622 acres, f. 50,102

July 1.—By HARRY BALL.

Elstow, Beds.—Small holding, 15 a. 3 r. 34 p., f 930

July 3.—By BEARD & SON.

Fulham.—20, Mulgrave-rd., u.t. 65 yrs., g.r. 6*l.*, w.r. 50*l.* 14s. 140
Paddington.—5, Porteus-rd., u.t. 27½ yrs., g.r. 9*l.*, e.r. 50*l.* 295
60, Tavistock-rd., u.t. 52 yrs., g.r. 10*l.*, e.r. 50*l.* 375

By R. W. FULLER, MOON, & FULLER.

Thornton Heath.—1 to 11 (odd), 15, 17, 19, 26 to 32 (even), Windsor-rd.; 145 to 167 (odd), Parchmore-rd.; 62 to 68 (even), Tottonrd., f., w.r. 626*l.* 12s. 4,250
Norwood.—Station-rd., f.g.r. 12*l.*, reversion in 71 yrs. 300
Grasmere-rd., f.g.r. 12*l.*, reversion in 92 yrs. 280
Thornton Heath.—Langdale-rd., f.g. rents 15*l.*, reversion in 94 yrs. 345
Croydon.—Dannett-rd., f.g. rents 59*l.* 3s. 6d., reversion in 70 yrs. 1,300
Stretton-rd., f.g.r. 6*l.*, reversion in 93 yrs. ... 135

By JONES, LANG, & Co.

Hounsditch.—No. 76 (s.), Corporation lease, g.r. 6*l.* 11s. 3d., y.r. 240*l.* 4,000
City.—186, Upper Thames-st., profit rental of 65*l.* for 7½ yrs. 200
38, Knightrider-st., u.t. 33 yrs., g.r. 150*l.*, y.r. 525*l.* 3,500

By KEMSLEY.

West Grinstead, Sussex.—Enclosure of land, 2¼ acres, f. 165
Thornton Heath.—95, Brigstock-rd., f., p. 600
Woodford.—1 and 2, Ashford-villas, f., w.r. 49*l.* 8s. 320

By ALEX. MOSSMAN.

Bayswater.—104, Talbot-rd., and 15, Burlington-mews, u.t. 48 yrs., g.r. 14*l.* 14s., y.r. 150*l.* ... 250

July 4.—By HAWKINS & SON.

Marylebone.—37 to 40, Bendall-st. (s.), u.t. 8¾ yrs., g.r. 19*l.* 19s., y.r. 195*l.* 400

By ORGILL, MARKS, & BARLEY.

Kensington.—High-st., Civet Cat, p.h. c., y.r. 150*l.* 3,120

By J. C. PLATT.

Hammersmith.—5, Mall-rd., u.t. 54 yrs., g.r. 7*l.*, e.r. 40*l.* 355
30, Overstone-rd., u.t. 54 yrs., g.r. 6*l.*, p. 200
32, Bridge-rd., u.t. 28 yrs., g.r. 5*l.* 13s. 4d., e.r. 38*l.* 170
20, Mansion House-st., f., y.r. 2*l.* £400
1 and 2, Edwin-cottages, f., w.r. 37*l.* 14s. 250
5, 7, and 9, Dalling-rd., u.t. 34 yrs., g.r. 7*l.* 10s., w.r. 78*l.* 380
Fulham.—39 and 41, Dymock-st., u.t. 67 yrs., g.r. 8*l.*, w.r. 68*l.* 18s. 320

By THORNBORROW & Co.

Addingham, Cumbld.—Farm, 221 a. 3 r. 23 p., f. and c. 2,750

By WOODS & Co.

Pattishall, Northants.—Freehold farm, 39 a. 0 r. 16 p. 850

By MADDISON, MILES, & MADDISON.

Rollesby, Norfolk.—Rollesby Hall Estate, 1,089 acres, l. 22,449

July 5.—By BAXTER PAYNE & LEPPER.

Islington.—320 and 322, Essex-rd. (s.), f., p. and y.r. 50*l.* 1,410

By MAPLE & Co.

Hampstead.—32, Parliament-hill, u.t. 66 yrs., g.r. 8*l.*, y.r. 75*l.* 510

By REYNOLDS & EASON.

Hoxton.—Felton-st., f.g. rents 11*l.*, reversion in 6 yrs. 235
Stoke Newington.—155, Southgate-rd., u.t. 20 yrs., g.r. 5*l.*, y.r. 45*l.* 135

Contractions used in these lists.—F.g.r. for freehold ground-rent; l.g.r. for leasehold ground-rent; i.g.r. for improved ground-rent; g.r. for ground-rent; r. for rent; f. for freehold; c. for copyhold; l. for leasehold; p. for possession; e.r. for estimated rental; w.r. for weekly rental; q.r. for quarterly rental; y.r. for yearly rental; u.t. for unexpired term; p.a. for per annum; yrs. for years; la. for lane; st. for street; rd. for road; sq. for square; pl. for place; ter. for terrace; cres. for crescent; av. for avenue; gdns. for gardens; yd. for yard; gr. for grove; b.h. for beerhouse; p.h. for public-house; o. for offices; s. for shops; ct. for court.

PUBLISHER'S NOTICES.

Nat. Tel., 6112 Gerrard. Telegrams, "The Builder, London."

THE INDEX (with TITLE-PAGE) for VOLUME C. (January to June, 1911) is given as a supplement with July 14 (this week's issue).

CLOTH CASES for Binding the Numbers are now ready, price 2s. 6d. each; also

READING CASES (Cloth), with Strings, price 9d. each.

THE HUNDREDTH VOLUME of "The Builder" (bound), price Twelve Shillings and Sixpence, will be ready on the 24th inst.

SUBSCRIBERS' VOLUMES, on being sent to the Office, will be bound at a cost of 3s. 6d. each.

CHARGES FOR ADVERTISEMENTS.

COMPETITIONS, CONTRACTS, ALL NOTICES ISSUED BY CORPORATE BODIES, COUNTY AND OTHER COUNCILS, PROSPECTUSES OF PUBLIC COMPANIES, SALES BY TENDER, LEGAL ANNOUNCEMENTS, etc., etc.

Six lines or under ..... 6s. 0d.
Each additional line ..... 1s. 0d.

SITUATIONS VACANT, PARTNERSHIPS, APPRENTICESHIPS, TRADE AND GENERAL ADVERTISEMENTS.

Six lines (about fifty words) or under ..... 4s. 6d.
Each additional line (about ten words) ..... 0s. 6d.

Terms for series of Trade advertisements, and for front page and other special positions, on application to the Publisher.

SITUATIONS WANTED (Single-handed—Labour only).

Four lines (about thirty words) or under ..... 2s. 6d.
Each additional line (about ten words) ..... 0s. 6d.

PREPAYMENT IS ABSOLUTELY NECESSARY.

*** Stamps *must not* be sent; but all sums should be remitted by Postal Orders, payable to J. MORGAN, and addressed to the Publisher of "THE BUILDER," 4, Catherine Street, W.C.

Advertisements for the current week's issue are received up to ONE p.m. on THURSDAY, but "Classification" is impossible in the case of any which may reach the Office after TWELVE NOON on that day. Those intended for the Outside Wrapper should be in by TWELVE NOON on WEDNESDAY.

ALTERATIONS IN STANDING ADVERTISEMENTS or ORDERS TO DISCONTINUE same must reach the Office before TEN o'clock on WEDNESDAY MORNING.

The Publisher cannot be responsible for DRAWINGS, TESTIMONIALS, etc., left at the Office in reply to advertisements, and strongly recommends that of the latter COPIES ONLY should be sent.

ADVERTISERS in "THE BUILDER" may have *Replies addressed to the Office*, 4, Catherine Street, Strand, W.C., *free of charge*. Letters will be forwarded if addressed envelopes are sent, together with sufficient stamps to cover the postage. Unused stamps are returned to advertisers the week after publication.

N.B.—The Reply Boxes are not intended for trade lists, circulars, and the like; should these be received, they cannot (if noticed) be forwarded.

AN EDITION Printed on THIN PAPER, for FOREIGN and COLONIAL CIRCULATION, is issued every week.

READING CASES { NINEPENCE EACH. By post (carefully packed), 1s.

TERMS OF SUBSCRIPTION.

"THE BUILDER" (Published Weekly) is supplied DIRECT from the Office to residents in any part of the United Kingdom at the prepaid rate of 19s. per annum, with delivery *by Friday Morning's Post* in London and its suburbs.

To Canada, post-free, 21s. 8d. per annum; and to all parts of Europe, America, Australia, New Zealand, India, China, Ceylon, etc., 26s. per annum.

Remittances (payable to J. MORGAN) should be addressed to The Publisher of "THE BUILDER," 4, Catherine-street, W.C.

PRICES CURRENT OF MATERIALS.

*** Our aim in this list is to give, as far as possible, the *average* prices of materials, not necessarily the lowest. Quality and quantity obviously affect prices—a fact which should be remembered by those who make use of this information.

BRICKS, &c.

Per 1000 Alongside, in River.

	£ s. d.
Best Stocks	1 13 0
Picked Stocks for Facings	2 7 0

Per 1000, Delivered at Railway Depôt.

	£ s. d.		£ s. d.
Flettons	1 9 0	Double Headers	13 7 6
Best Fareham Red	3 12 0	One Side and two Ends	17 7 6
Best Red Pressed		Two Sides and one End	18 7 6
Ruabon Facing	5 0 0	Splays & Squints	15 17 6
Best Blue Pressed Staffordshire	3 15 0	Best Dipped Salt Glzd. Str'tch'rs	10 17 6
Do. Bullnose	4 0 0	Headers	10 7 6
Best Stourbridge Fire Bricks	3 14 0	Quoins, Bullnose, and Flats	14 7 6
GLAZED BRICKS.		D'ble Stretchers	16 7 6
Best White and Ivory Glazed Stretchers	10 17 6	Double Headers	13 7 6
Headers	10 7 6	One Side and two Ends	17 7 6
Quoins, Bullnose, and Flats	14 7 6	Two Sides and one End	18 7 6
D'ble Stretchers	16 7 6	Splays & Squints	15 17 6

Second Quality White and Dipped Salt Glazed, £1 5s. per 1000 less than best.

	s. d.	
Thames and Pit Sand	6 9	per yard, delivered.
Thames Ballast	5 3	" "
Best Portland Cement	29 0	per ton, "
Best Ground Blue Lias Lime	19 0	" "

NOTE—The cement or lime is exclusive of the ordinary charge for sacks.

Grey Stone Lime ..... 11s. 6d. per yard delivered.
Stourbridge Fireclay in sacks 27s. 0d. per ton at rly dpt.

STONE.

Per Ft. Cube.

	s. d.
BATH STONE—delivered on road waggons, Paddington Depôt	1 6½
Do. do. delivered on road waggons, Nine Elms Depôt	1 8½
PORTLAND STONE (20 ft. average)—	
Brown Whitbed, delivered on road waggons, Paddington Depôt, Nine Elms Depôt, or Pimlico Wharf	2 1
White Basebed, delivered on road waggons Paddington Depôt, Nine Elms Depôt, or Pimlico Wharf	2 2½

Per Ft. Cube, delivered at Railway Depôt.

	s. d.		s. d.
Ancaster in blocks	1 10	Closeburn Red Freestone	2 0
Beer in blocks	1 6	Red Mansfield Freestone	2 4
Greenshill in blocks	1 10	Talacre & Gwespyr Stone	2 8
Darley Dale in blocks	2 4		
Red Corsehill in blocks	2 3		

YORK STONE—*Robin Hood Quality.*

Per Ft. Cube, Delivered at Railway Depôt.	s. d.
Scappled random blocks	2 10

Per Ft. Super., Delivered at Railway Depôt.

6 in. sawn two sides landings to sizes (under 40 ft. super.)	2 3
6 in. rubbed two sides ditto, ditto	2 6
3 in. sawn two sides slabs (random sizes)	0 11½
2 in. to 2½ in. sawn one side slabs (random sizes)	0 7½
1½ in. to 2 in. ditto, ditto	0 6

HARD YORK—

Per Ft. Cube, Delivered at Railway Depôt.	
Scappled random blocks	3 0

Per Ft. Super., Delivered at Railway Depôt.

6 in. sawn two sides landing to sizes (under 40 ft. super.)	2 8
6 in. rubbed two sides ditto	3 0
3 in. sawn two sides slabs (random sizes)	1 2
2 in. self-faced random flags	0 5

SLATES.

Per 1000 of 1200 at Railway Depôt.

In. In.	£ s. d.	In. In.	£ s. d.
20×10 best blue Bangor	13 2 6	20×10 best Eur'ka unfading green	15 17 6
20×12 ditto	13 17 6	20×12 ditto	18 7 6
20×10 1st quality ditto	13 0 0	18×10 ditto	13 5 0
20×12 ditto	13 15 0	16×8 ditto	10 5 0
16×8 ditto	7 5 0	20×10 permanent green	11 12 6
22×10 best blue Portmadoc	12 12 6	18×10 ditto	9 12 6
16×8 ditto	6 12 6	16×8 ditto	6 12 6

TILES.

At Railway Depôt.

	s. d.		s. d.
Best plain red roofing (per 1000)	42 0	Do. Ornamental (per 1000)	52 6
Hip and Valley (per doz.)	3 7	Hip and Valley (per doz.)	4 0
Best Broseley (per 1000)	50 0	Best Ruabon red, brown, or brindled (Edw'ds) (per 1000)	57 6
Do. Ornamental (per 1000)	60 0	Do. Ornamental (per 1000)	50 0
Hip (per doz.)	4 0	Hip (per doz.)	4 0
Valley (per doz.)	3 0	Valley (per doz.)	3 6
Best "Hartshill" brand, plain sand-faced (per 1000)	50 0	Staffords. (Hanley) Reds or Brindled (per 1000)	42 6
Do. pressed (per 1000)	47 6	Hand-made sand-faced (per 1000)	45 0
		Hip (per doz.)	4 0
		Valley (per doz.)	3 6

WOOD.

BUILDING WOOD.	At per standard. £ s. d.		£ s. d.
Deals: best 3 in. by 11 in. and 4 in. by 9 in. and 11 in.	14 0 0	...	15 10 0
Deals: best 3 by 9	13 10 0	...	14 10 0
Battens: best 2½ in. by 7 in. and 8in., and 3 in. by 7 in. and 8 in.	11 10 0	...	12 10 0
Battens: best 2½ by 6 and 3 by 6	0 10 0		less than 7 in. and 8 in.
Deals: seconds	1 0 0		less thn best.
Battens: seconds	0 10 0	»	»
2 in. by in. and 2 in. by 6 in.	9 10 0	...	10 10 0
2 in. by 4½ in. and 2 in. by 5 in.	9 0 0	...	10 0 0
Foreign Sawn Boards— 1 in. and 1¼ in. by 7 in.	0 10 0		more than battens.
¼ in.	1 0 0		»
Fir timber: best middling Danzig or Memel (average specification)	At per load of 50 ft. 5 0 0	...	5 10 0
Seconds	4 10 0	...	5 0 0
Small timber (8 in. to 10 in.)	3 17 6	...	4 0 0
Small timber (6 in. to 8 in.)	3 5 0	...	3 10 0
Swedish balks	2 12 6	...	3 0 0
Pitch-pine timber (30 ft. average)	4 10 0	...	5 5 0

JOINERS' WOOD.	At per standard.		
White Sea: first yellow deals, 3 in. by 11 in.	24 10 0	...	25 10 0
3 in. by 9 in.	22 10 0	...	23 10 0
Battens, 2½ in. and 3 in. by 7 in.	17 0 0	...	18 0 0
Second yellow deals, 3in. by 11in.	19 0 0	...	20 0 0
» » 3 in. by 9 in.	18 0 0	...	19 10 0
Battens, 2½ in. and 3in. by 7 in.	14 0 0	...	15 0 0
Third yellow deals, 3 in. by 11 in. and 9 in.	14 0 0	...	15 0 0
Battens, 2½ in. and 3 in. by 7 in.	11 10 0	...	12 10 0
Petersburg: first yellow deals, 3 in. by 11 in.	21 10 0	...	22 10 0
Do. 3 in. by 9 in.	18 10 0	...	19 10 0
Battens	14 0 0	...	15 0 0
Second yellow deals, 3 in. by 11 in.	16 10 0	...	17 10 0
Do. 3 in. by 9 in.	15 0 0	...	16 0 0
Battens	11 10 0	...	12 10 0
Third yellow deals, 3in. by 11 in.	13 10 0	...	14 10 0
Do. 3 in. by 9 in.	13 0 0	...	14 0 0
Battens	10 10 0	...	11 0 0
White Sea and Petersburg— First white deals, 3 in. by 11 in.	15 0 0	...	16 0 0
» » 3 in. by 9 in.	14 0 0	...	14 10 0
Battens	11 10 0	...	12 10 0
Second white deals, 3in. by 11in.	14 0 0	...	15 0 0
» » 3 in. by 9 in.	13 0 0	...	14 0 0
Battens	10 10 0	...	11 0 0
Pitch-pine: deals	19 0 0	...	21 0 0
Under 2 in. thick extra	0 10 0	...	1 0 0
Yellow Pine—First, regular sizes	44 0 0		upwards.
Oddments	32 0 0		»
Seconds, regular sizes	33 0 0		»
Oddments	28 0 0		»
Kauri Pine—Planks per ft. cube.	0 3 6	...	0 5 0
Danzig and Stettin Oak Logs— Large, per ft. cube	0 3 0	...	0 3 9
Small » »	0 2 6	...	0 2 6
Wainscot Oak Logs, per ft. cube	0 5 6	...	0 6 0
Dry Wainscot Oak, per ft. sup. as inch	0 0 8½	...	0 0 9½
¼ in. do. do.	0 0 7	...	—
Dry Mahogany—Houndras, Tabasco, per ft. super. as inch	0 0 10	...	0 1 1
Selected, Figury, per ft. super. as inch	0 1 6	...	0 2 6
Dry Walnut, American, per ft. super. as inch	0 0 10	...	0 1 0
Teak, per load	18 0 0	...	22 0 0
American Whitewood planks, per ft. cube	0 4 0	...	0 5 0
Prepared Flooring, etc.—	Per square.		
1 in. by 7 in. yellow, planed and shot	0 13 6	...	0 17 0
1 in. by 7 in. yellow, planed and matched	0 14 0	...	0 18 0
1¼ in. by 7 in. yellow, planed and matched	0 16 0	...	1 0 0
1 in. by 7 in. white, planed and shot	0 12 0	...	0 14 6
1 in. by 7 in. white, planed and matched	0 12 6	...	0 15 0
1¼ in. by 7 in. white, planed and matched	0 15 0	...	0 16 6
¼ in. by 7 in. yellow, matched and beaded or V-jointed brds.	0 11 0	...	0 13 6
1 in. by 7 in. » »	0 14 0	...	0 18 6
¼ in. by 7 in. white » »	0 10 0	...	0 11 0
1 in. by 7 in. » »	0 12 9	...	0 15 0

6 in. at 6d. to 9d. per square less than 7 in.

JOISTS, GIRDERS, &c.

	In London, or delivered Railway Vans, per ton. £ s. d.		£ s. d.
Rolled Steel Joists, ordinary sections	7 0 0	...	7 10 0
Compound Girders, ordinary sections	9 0 0	...	10 0 0
Steel Compound Stanchions	11 0 0	...	12 0 0
Angles, Tees, and Channels, ordinary sections	9 0 0	...	10 0 0
Flitch Plates	9 0 0	...	9 10 0
Cast Iron Columns & Stanchions, including ordinary patterns	7 10 0	...	8 10 0

METALS.

	Per ton, in London. £ s. d.		£ s. d.
IRON— Common Bars	8 10 0	...	9 0 0
Staffordshire Crown Bars, good merchant quality	8 15 0	...	9 5 0
Staffordshire "Marked Bars"	10 10 0	...	—
Mild Steel Bars	8 15 0	...	9 5 0
Hoop Iron, basis price	9 5 0	...	9 10 0
» » Galvanised	17 0 0	...	—
(*And upwards, according to size and gauge.)			
Sheet Iron Black— Ordinary sizes to 20 g.	9 15 0	...	—
» » 24 g.	10 15 0	...	—
» » 26 g.	12 5 0	...	—
Sheet Iron, Galvanised, flat, ordinary quality— Ordinary sizes, 6 ft. by 2 ft. to 3 ft. to 20 g.	15 0 0	...	—
Ordinary sizes to 22 g. and 24 g.	15 10 0	...	—
» » 26 g.	16 10 0	...	—
Sheet Iron, Galvanised, flat, best quality— Ordinary sizes to 20 g.	18 0 0	...	—
» » 22 g. and 24 g.	18 10 0	...	—
» » 26 g.	20 0 0	...	—
Galvanised Corrugated Sheets— Ordinary sizes, 6ft. to 8ft. 20 g.	14 10 0	...	—
» » 22 g. and 24 g.	14 15 0	...	—
» » 26 g.	16 5 0	...	—
Best Soft Steel Sheets, 6 ft. by 2 ft. to 3 ft. to 20 g. and thicker	12 0 0	...	—
Best Soft Steel Sheets, 2 g. & 24 g.	13 0 0	...	—
» » » 26 g.	15 0 0	...	—
Cut Nails, 3 in. to 6 in. (Under 3 in., usual trade extras.)	10 10 0	...	11 0 0

LEAD, &c.

	£ s. d.		£ s. d.
LEAD—Sheet, English, 4lb. and up	16 15 0	...	—
Pipe in coils	17 5 0	...	—
Soil pipe	20 5 0	...	—
Compo pipe	20 5 0	...	—
ZINC—Sheet—	In casks of 10 cwt.		
Vielle Montagne	31 10 0	...	—
Silesian	31 0 0	...	—
Zinc, in bundles, 1s. per cwt. extra.			
COPPER— Strong Sheet per lb.	0 1 0	...	—
Thin »	0 1 1	...	—
Copper nails »	0 0 10	...	—
Copper wire »	0 0 10	...	—
BRASS— Strong Sheet »	0 0 11	...	—
Thin »	0 1 0	...	—
TIN—English Ingots »	0 1 11	...	—
SOLDER—Plumbers' »	0 0 8½	...	—
Tinmen's »	0 0 11	...	—
Blowpipe »	0 1 2	...	—

ENGLISH SHEET GLASS IN CRATES OF STOCK SIZES.*

Per Ft., Delivered.

15 oz. thirds	2½d.	26 oz. fourths	3½d.
» fourths	1½d.	32 oz. thirds	5½d.
21 oz. thirds	3½d.	» fourths	4½d.
» fourths	2½d.	Fluted Sheet, 15 oz.	3½d.
23 oz. thirds	4½d.	» 21 oz.	4½d.

ENGLISH ROLLED PLATE IN CRATES OF STOCK SIZES.*

Per Ft., Delivered.

⅛ Hartley's	2d.	Figured Rolled, Oxford Rolled, Oceanic, Arctic, Muffled, and Rolled Cathedral, white	3½d.
3/16 »	2½d.		
¼ »	2¾d.	Ditto, tinted	5d.

* Not less than three crates.

OILS, &c.

		£ s. d.
Raw Linseed Oil in pipes	per gallon	0 3 7
» » » in barrels	»	0 3 8
» » » in drums	»	0 3 10
Boiled » » in barrels	»	0 3 10
» » » in drums	»	0 4 1
Turpentine in barrels	»	0 3 5
» in drums	»	0 3 7
Genuine Ground English White Lead, per ton		21 10 0
Red Lead, Dry	»	20 0 0
Best Linseed Oil Putty	per cwt.	0 11 0
Stockholm Tar	per barrel	1 12 0

VARNISHES, &c.

	Per gallon. £ s. d.
Fine Pale Oak Varnish	0 8 0
Pale Copal Oak	0 10 6
Superfine Pale Elastic Oak	0 12 6
Fine Extra Hard Church Oak	0 10 0
Superfine Hard-drying Oak, for seats of Churches	0 14 6
Fine Elastic Carriage	0 12 0
Superfine Pale Elastic Carriage	0 16 0
Fine Pale Maple	0 10 0
Finest Pale Durable Copal	0 18 0
Extra Pale French Oil	1 1 0
Eggshell Flating Varnish	0 18 0
White Pale Enamel	1 4 0
Extra Pale Paper	0 12 0
Best Japan Gold Size	0 10 6
Best Black Japan	0 16 0
Oak and Mahogany Stain	0 9 0
Brunswick Black	0 8 »
Berlin Black	0 16 0
Knotting	0 10 9
French and Brush Polish	0 10 6

TO CORRESPONDENTS.

NOTE.—All communications with respect to literary and artistic matters should be addressed to "THE EDITOR" (and not to any person by name); those relating to advertisements and other exclusively business matters should be addressed to "THE PUBLISHER," and *not* to the Editor.

All communications must be authenticated by the name and address of the sender, whether for publication or not. No notice can be taken of anonymous communications.

The responsibility of signed articles, letters, and papers read at meetings rests, of course, with the authors.

We cannot undertake to return rejected communications; and the Editor cannot be responsible for drawings, photographs, manuscripts, or other documents, or for models or samples, sent to or left at this office, unless he has specially asked for them.

All drawings sent to or left at this office for consideration should bear the owner's name and address on either the face or back of the drawing. Delay and inconvenience may result from inattention to this.

Any commission to a contributor to write an article, or to execute or lend a drawing for publication, is given subject to the approval of the article or drawing, when received, by the Editor, who retains the right to reject it if unsatisfactory. The receipt by the author of a proof of an article in type does not necessarily imply its acceptance.

N.B.—Illustrations of the First Premiated Design in any important architectural competition will always be accepted for publication by the Editor, whether they have been formally asked for or not.

TENDERS.

Communications for insertion under this heading should be addressed to "The Editor," and must reach us *not later than* 10 *a.m. on Thursday.* [N.B.—We cannot publish Tenders unless authenticated either by the architect or the building owner; and we cannot publish announcements of Tenders accepted unless the amount of the Tender is stated, nor any list in which the lowest Tender is under 100*l.* unless in some exceptional cases and for special reasons.]

* Denotes *accepted.* † Denotes *provisionally accepted.*

BOUGHTON MONCHELSEA.—For Boughton Monchelsea Council drainage work, for Kent Education Committee. Mr. Wilfrid H. Robinson, architect:—

E. Jenner	£305	T. Wood & Sons, Boughton Monchelsea*	£148
W. T. Burrows	180		
R. Hodge	175		

BRADFORD.—For extension of vicuna works. Mr. T. H. Gamble, architect, 9, Bond-street, Bradford:—

Ironfounder's: H. Barrett & Son, Bradford.	£365 0
Mason: G. Day, Bradford	497 0
Joiner: C. Chambers, Great Horton, Bradford	250 10
Slater: J. Smithies, Great Horton, Bradford	99 10
Plumber: J. Walker, Leeds-road, Bradford.	30 0

CARDIFF.—For the erection of a public convenience, for the Cardiff Corporation. Quantities by the City Engineer:—

T. Davies & Sons	£235 0 0	Hatherley & Co.	£167 0 0
W. Cox	204 14 5	Tucker Bros.	161 9 10
J. Oxenham	193 8 0	E. D. W. Evans, Cardiff*	160 13 8
Knox & Wells	179 11 0		
E. Turner & Sons	175 10 9		

EBBW VALE (Mon.).—For the erection of new institute buildings, with caretaker's cottage, boundary walls, etc., at Victoria, for the Committee of the Waunlwyd and Victoria Institute. Mr. Fred J. Veall, architect, Cardiff. Quantities by the architect:—

E. H. Evans & Bros.	£3,095	Knox & Wells	£2,887
D. Davies & Sons	3,049	H. A. Herbert & Co.	2,885
J. Allan, Ltd.	3,025	W. Symonds & Co., Ltd.	2,885
Kirby & Westacott	2,950	A. J. Colborne	2,848
Melhuish Bros.	2,950		
Ebbw Valley Building Co., Ltd., Victoria, Ebbw Vale*	2,900		

EXETER.—For alterations and additions at the workhouse. Mr. R. M. Challice, architect, 14, Bedford-circus, Exeter:—

W. Brealy	£750 0 0	E. H. Westcott	£716 13 3
M. T. Sleeman	725 0 0	G. Setter	665 0 0
Westcott, Austin, & White	720 0 0	J. W. Castle	658 0 0

[All of Exeter.]

GISLINGHAM.—For erection of a house, for the Baron Hartismere Court of the Ancient Order of Foresters. Mr. T. Inglis Goldie, A.R.I.B.A., architect, Bank Plain, Norwich. Quantities by the architect:—

	House.	Stable.	Total.
Howes Bros	£618 15 6	£152 8 0	£771 3 6
A. Gayford	597 0 0	145 0 0	742 0 0
J. R. Boddy	587 0 0	132 0 0	719 0 0
H. A. Andrews	565 18 6	131 11 6	697 10 0
T. H. Yelf	561 10 0	124 17 0	686 7 0
Theobald & Sons	558 10 0	121 0 0	679 10 0
L. Plummer	550 0 0	120 0 0	670 0 0
R. Hogg & Son	536 0 0	123 0 0	659 0 0
Eldon J. Smith	533 10 0	116 10 0	650 0 0
A. H. Sampson	536 10 0	110 10 0	647 0 0
Podd & Fisher	510 0 0	130 0 0	640 0 0
J. W. Trudgett, Sussex-road, Colchester*	498 0 0	116 0 0	614 0 0
Architect's estimate	530 0 0	120 0 0	650 0 0

GLOUCESTER.—For addition of an aisle to Hucclecote Church. Mr. W. Fitzgerald Jones, architect, 25, St. Aldate-street, Gloucester. Quantities by Messrs. Vale & Kingsford, 25, St. Aldate-street, Gloucester:—

T. H. Tilston	£1,235 0	Estcourt & Sons	£927 0
F. J. Allen	1,215 0	King & Sons	900 0
W. T. Nicholls	1,059 0	W. Jones	870 0
Byard & Sons	1,027 0	A. J. Dolman, Gloucester*	789 0
J. Simmonds	982 10		
Collins & Godfrey	970 0		

HEREFORD.—For restoration of the tower of Ross Church. Messrs. Nicholson & Hartree, architects, Offa-street, Hereford:—

Blackburn, Starling, & Co., Ltd.	£817	12	6	V. G. Morris	£598	0	0
G. & W. Edwards	666	0	0	C. C. Gold & Co., 39, The Broadway, Stratford, London*	528	0	0
W. P. Lewis & Co.	642	0	0				

KINGSTOWN.—For erection of the Carnegie Library. Messrs. O'Callaghan & Webb, architects, 31, South Frederick-street, Dublin. Quantities by Mr. Samuel H. Bolton:—

J. Plunkett	£4,847	2	6	Alex. Hull & Co.	£3,949	0	0
J. Beckett	4,800	0	0	J. & R. Thompson	3,892	0	0
H. & J. Martin, Ltd.	4,289	0	0	D. J. Dawling	3,879	0	0
G. Squire & Co.	4,255	18	11	H. Pemberton & Sons	3,798	0	0
Collen Bros.	4,200	0	0	Weafer	3,737	5	8
Crampton	4,019	0	0	J. & P. Good, Ltd., Dublin*	3,690	0	0
J. & W. Stewart	3,985	0	0				

LLANDRINDOD.—For pair of semi-detached villas, for Mr. Edwin Holt. Messrs. Alfred Swash & Son, architects and surveyors, Newport, Mon., and Llandrindod. Quantities by the architects:—

J. G. Lloyd, Llandrindod* £1,550

LLANWRTYD WELLS.—For semi-detached houses, for Mr. Daniel Jones. Messrs. Alfred Swash & Son, architects, Llandrindod:—

N. Evans, Llanwrtyd Wells* £1,017

LONDON.—For the supply of four car traversers for use at Streatham, Camberwell, and Hammersmith car-sheds, for the London County Council:—

Stothert & Pitt, Ltd.	£3,822
Heenan & Froude, Ltd.	2,962
S. H. Heywood & Co., Ltd.	2,780
S. S. Whiteley & Co.	2,768
Cowans, Sheldon, & Co., Ltd.	2,592
Hurst, Nelson, & Co., Ltd.	2,525
Dick, Kerr, & Co., Ltd.	2,452
Brush Electrical Engineering Co., Ltd., Loughborough*	2,297

[The estimate of the Chief Officer of Tramways comparable with tenders is £2,900.]

LONDON.—For painting work at Westminster, Bayswater, Notting Hill, South Audley-street (street), Chelsea, Fulham, Fulham (sub-), Kensington, Knightsbridge, North Kensington, Shepherd's Bush, Manchester-square, Edgware-road, Hammersmith, and Brompton fire-stations, for the London County Council:—

F. G. Minter	£490
Lole & Co., Trafalgar-square, Chelsea, S.W.*	189

[The Architect's estimate comparable with the tenders was £228 9s.]

LONDON.—For painting external wood and iron work at New-cross, Old Kent-road, Kennington, Peckham-road, Tooley-street, and Foxley-road fire-stations, and the chief station of the Fire Brigade, for the London County Council:—

F. & H. F. Higgs	£230 10
G. Parker & Sons	207 0
Higgs & Hill, Ltd., Crown Works, South Lambeth, S.W.*	203 15

[The Architect's estimate comparable with the tenders was £184 3s. 5d.]

LONDON.—For painting work at Charlton, Eltham, North Woolwich, Plumstead, Lee green, East Greenwich, Rushey-green, Lewisham, and Shooter's Hill fire-stations, for the London County Council:—

H. Groves	£177 10 0
W. Bailey	132 10 0
J. S. Fenn	126 0 0
E. Proctor & Sons, High-street, Plumstead*	108 16 10

[The Architect's estimate comparable with the tenders was £147 6s. 11d.]

LONDON.—For painting work at Battersea, Battersea (sub-), Battersea (river), Clapham, Vauxhall, Wandsworth, and Northcote-road fire-stations, for the London County Council:—

Maxwell Bros., Ltd.	£189 0 0
J. & C. Bowyer, Ltd.	174 0 0
W. Read	164 12 0
E. Triggs, 92, The Chase, Clapham, S.W.*	140 6 2

[The Architect's estimate comparable with the tenders was £202 5s. 7d.]

LONDON.—For painting work at Deptford, Greenwich, Pagent's Wharf, Cherry Garden-street, Rotherhithe, and Spa-road (street) fire-stations, for the London County Council:—

E. Mills	£214 12 0
H. L. Holloway	206 0 0
F. & T. Thorne	199 0 0
E. Proctor & Sons, High-street, Plumstead*	165 18 6

[The Architect's estimate comparable with the tenders was £210 15s. 9d.]

LONDON.—For painting external wood and iron-work at Whitefriars, Clerkenwell, Scotland-yard, Waterloo-road, and Holborn fire-stations, for the London County Council:—

Ashby & Horner	£242 5
J. Grover & Son, Wilton Works, New North-road, N.*	211 15

[The Architect's estimate comparable with the tenders was £226 14s. 1d.]

LONDON.—For painting work at Great Marlborough-street, Kentish Town (11A, Highgate-road), Holloway, Hornsey-rise, Islington, Hampstead, Hampstead (Holly-hill), Camden Town, St. John's Wood, West Hampstead, Euston, and Caledonian-road fire stations, for the London County Council:—

Thompson & Beveridge	£136 10 0
Marchant & Hirst	123 16 0
Stevens & Sons, 33, Crouch-hill, N.*	116 18 6

[The Architect's estimate, comparable with the tenders, was £139 2s. 9d.]

LONDON.—For painting work at the Streatham, Sydenham, Tooting, West Norwood, Brixton, and Herne-hill fire-stations, for the London County Council:—

W. & C. Brown	£74 0
W. Akers & Co., Ltd.	71 17
J. Garrett & Son	70 0
W. Johnson & Co., Ltd., Wandsworth-common, S.W.*	58 2

[The Architect's estimate, comparable with the tenders, was £75 11s. 10d.]

LONDON.—For painting the wood and iron-work at the following fire-stations for the London County Council: Hackney, Poplar, Shoreditch, Wapping, Whitechapel, Homerton, Stoke Newington, Bishopsgate, Millwall, Shadwell, Burdett-road, and Bethnal-green fire-stations:—

Vigor & Co.	£36 7 6
T. Brevertor, Savoy-mansions, Savoy-street, Strand, W.C.*	32 4 2

[The Architect's estimate comparable with the tenders was £39 2s. 10d. In each case the lowest tender has been accepted. The total amount of accepted tenders is £1,226 16s. 2d., or £226 16s. less than the total of the Architect's estimates (£1,453 12s. 2d.).]

LONDON.—For the erection of a new police-station at Plaistow. Mr. J. Dixon Butler, F.R.I.B.A., Architect, Surveyor to the Metropolitan Police District, New Scotland-yard, S.W. Quantities by Messrs. Thurgood, Son, & Chidgey, 8, Adelphi-terrace, Strand, W.C.:—

J. W. Jerram	£11,950	Perry & Co. (Bow), Ltd.	£10,772
J. Jarvis & Sons, Ltd.	11,410	J. Grover & Son	10,632
J. Willmott & Sons	11,245	Fairhead & Son	10,595
Killby & Gayford, Ltd.	10,992	Patman & Fotheringham, Ltd.	10,583
A. E. Symes	10,983	J. W. Maddison	10,494
Sabey & Sons, Ltd.	10,873	G. Godson & Sons	10,467
J. Mowlem & Co., Ltd.	10,860	E. Lawrance & Sons, Ltd.	10,179
J. S. Hammond & Son	10,785		

MALTBY.—For construction of sewers and sewage disposal works, for the Rotherham Rural District Council. Mr. B. Hey, Surveyor to the Council, Imperial-buildings, Rotherham. Quantities by the Surveyor:—

T. Gray & Sons, Tinsley, Sheffield* £7,650

NORFOLK.—For erection of cottage at Terrington St. Clement. Messrs. Walker & Walker, architects, 44, Market-place, Wisbech. Quantities by the architects:—

H. W. Reeder	£263	P. Bone	£190
H. Rilett	240	R. Eggleton, Terrington St. Clement, King's Lynn*	188
Hall & Lawson	230		
Johnson & Son	220		

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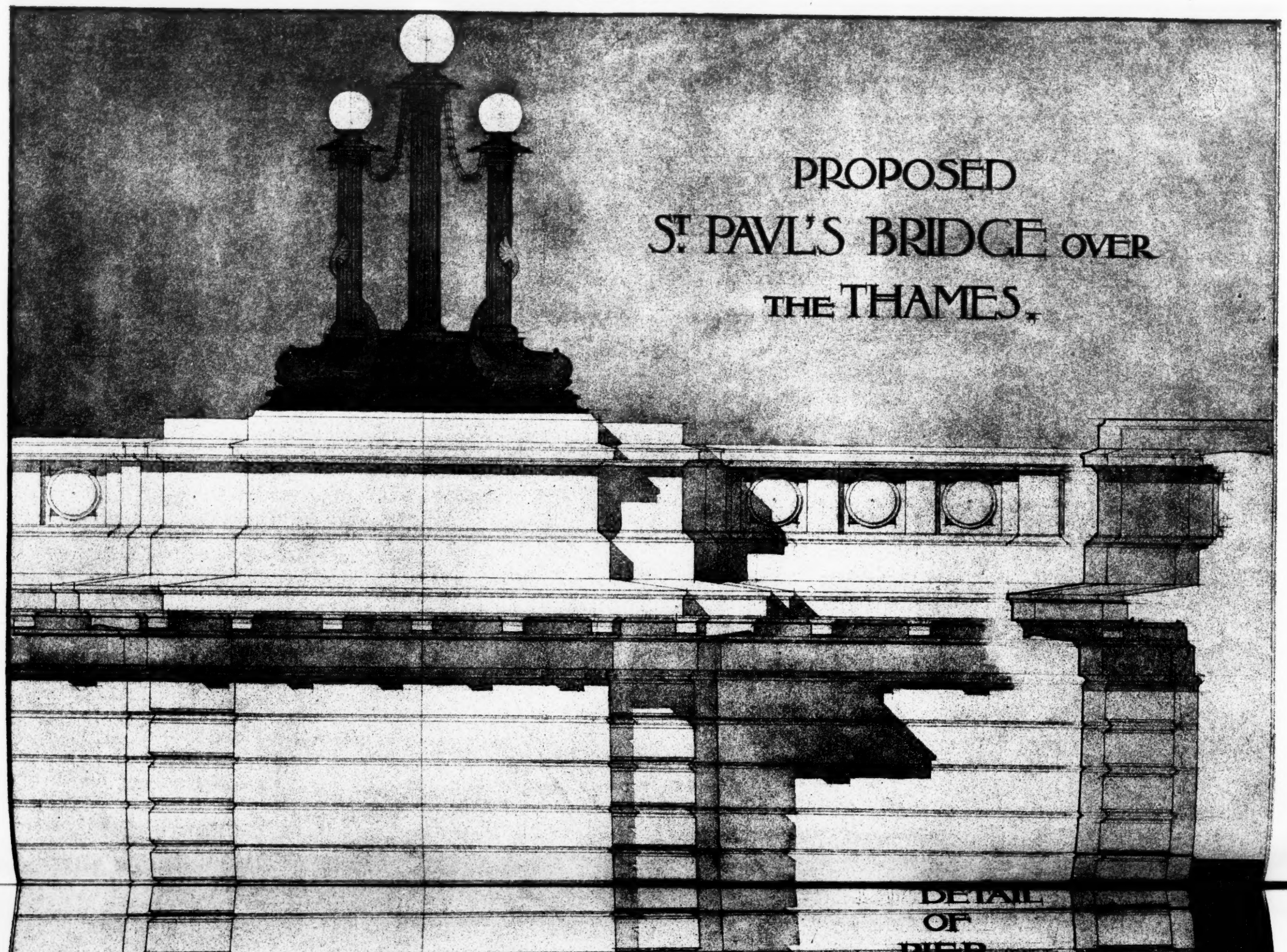

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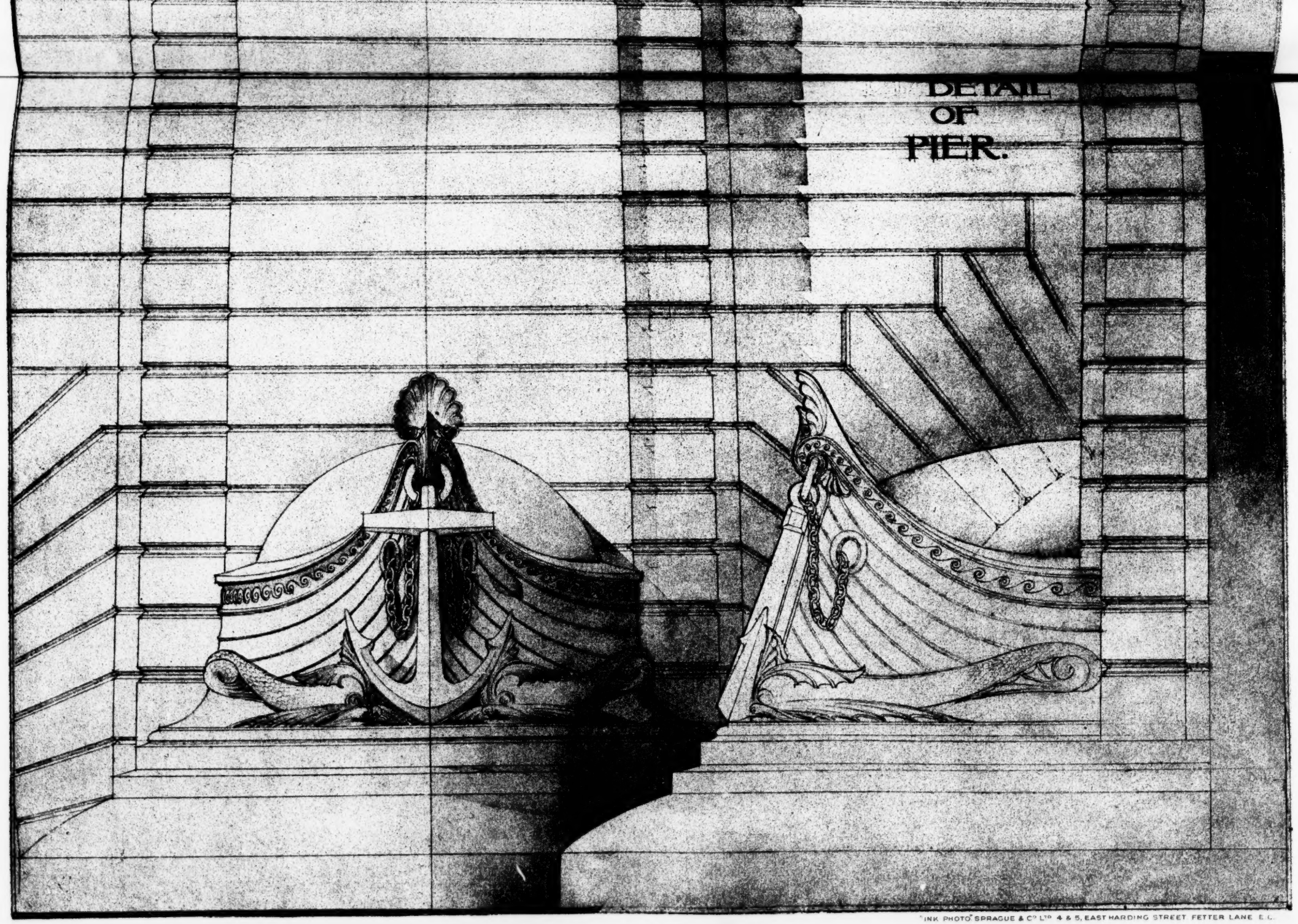

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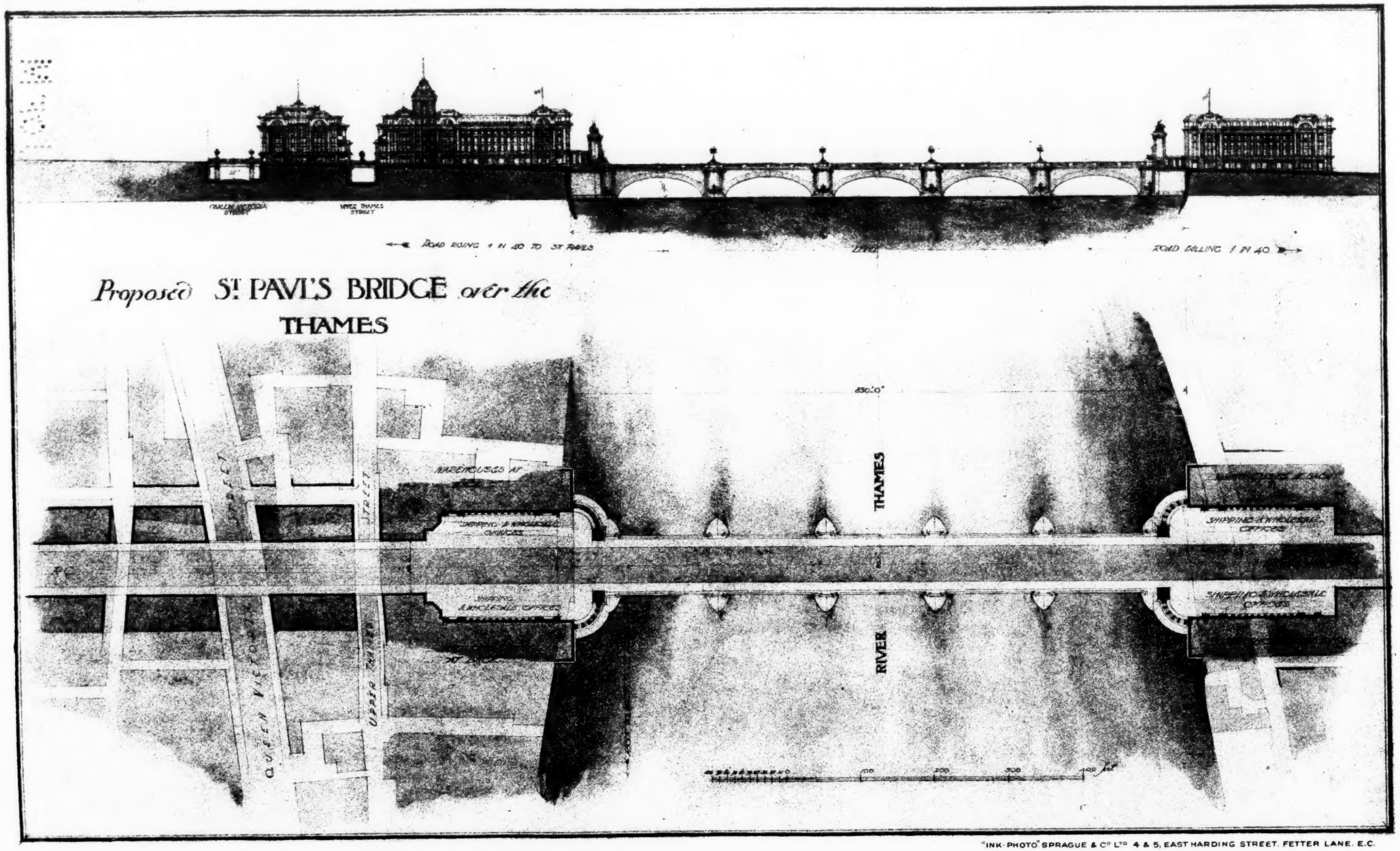

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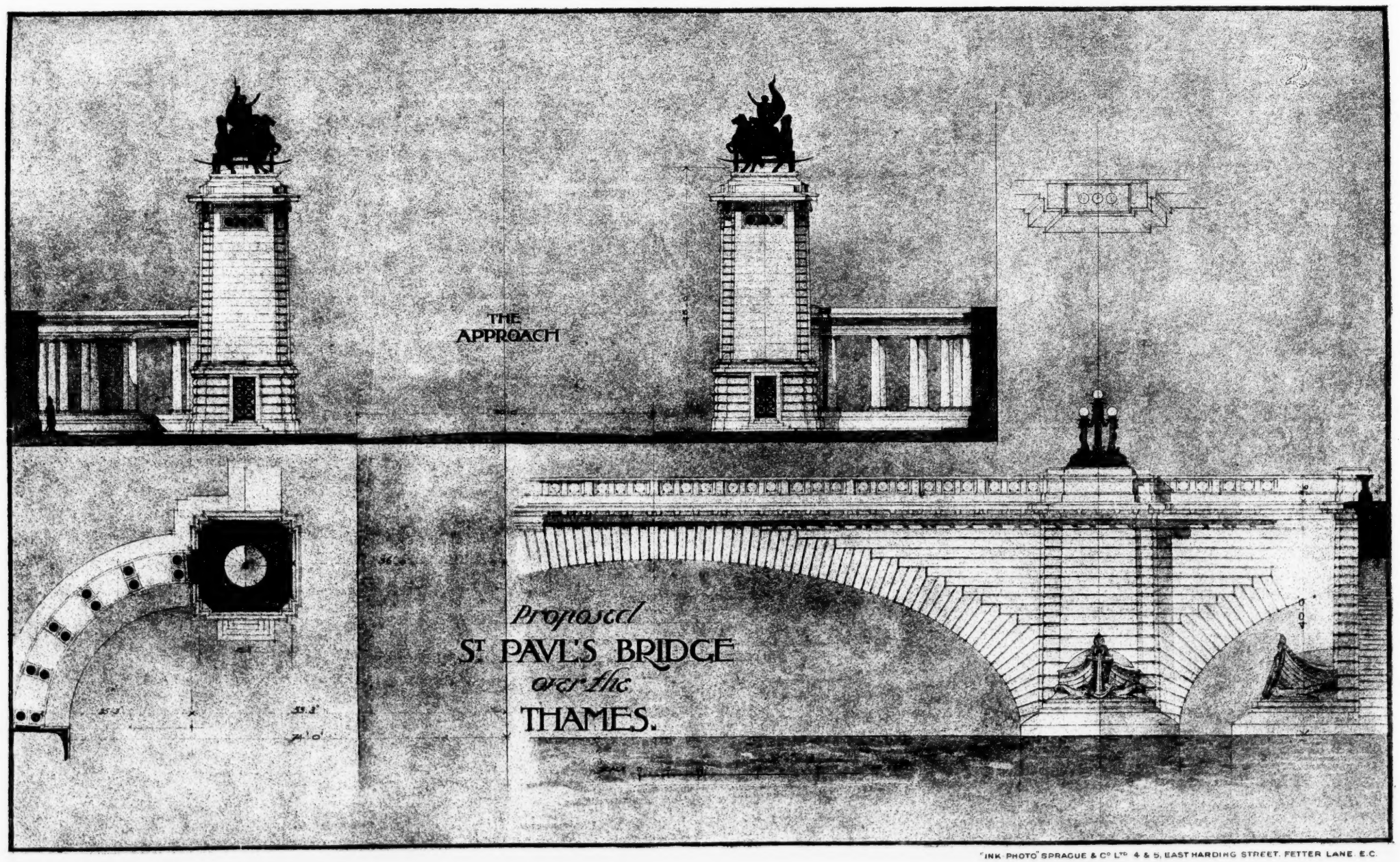

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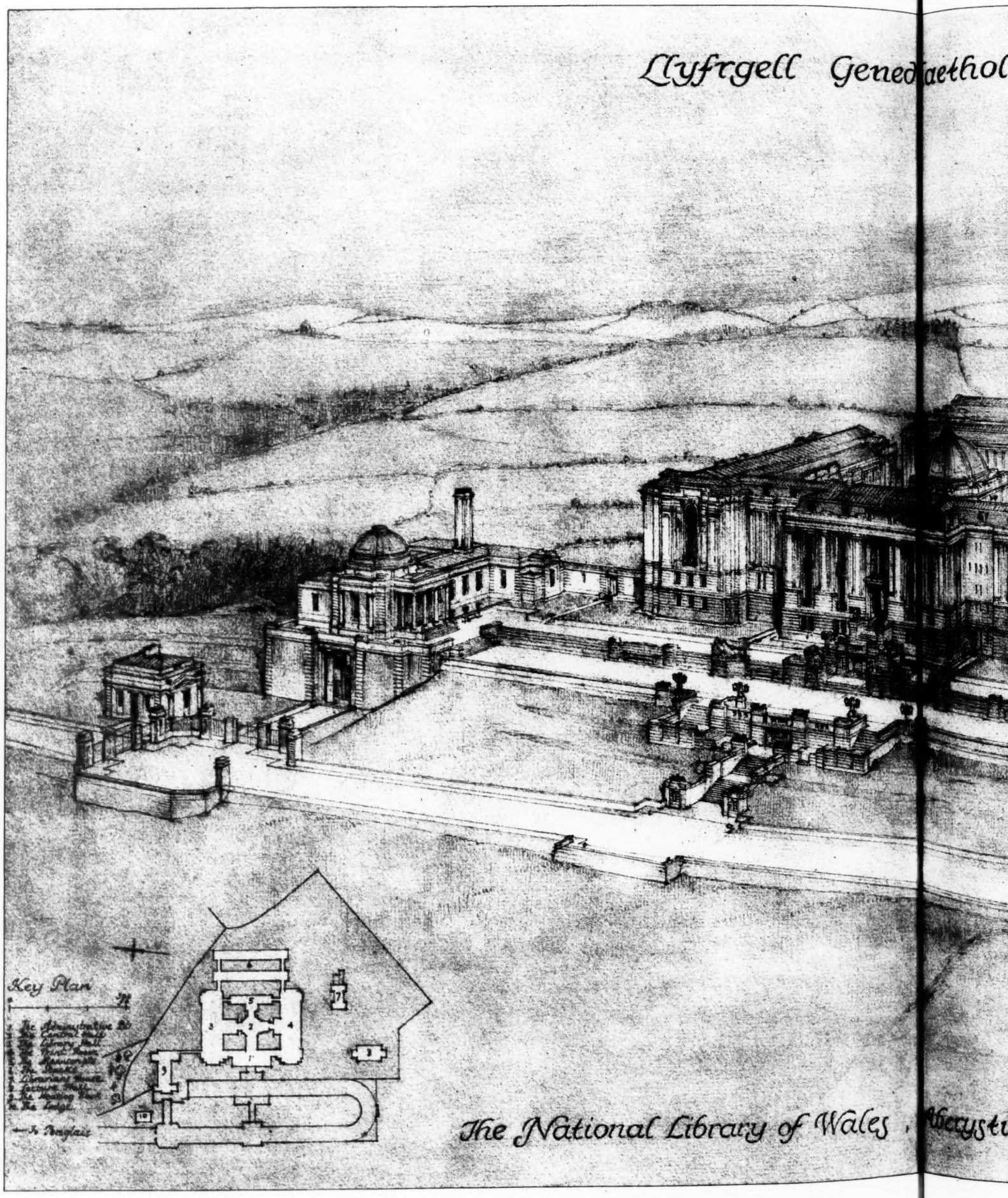

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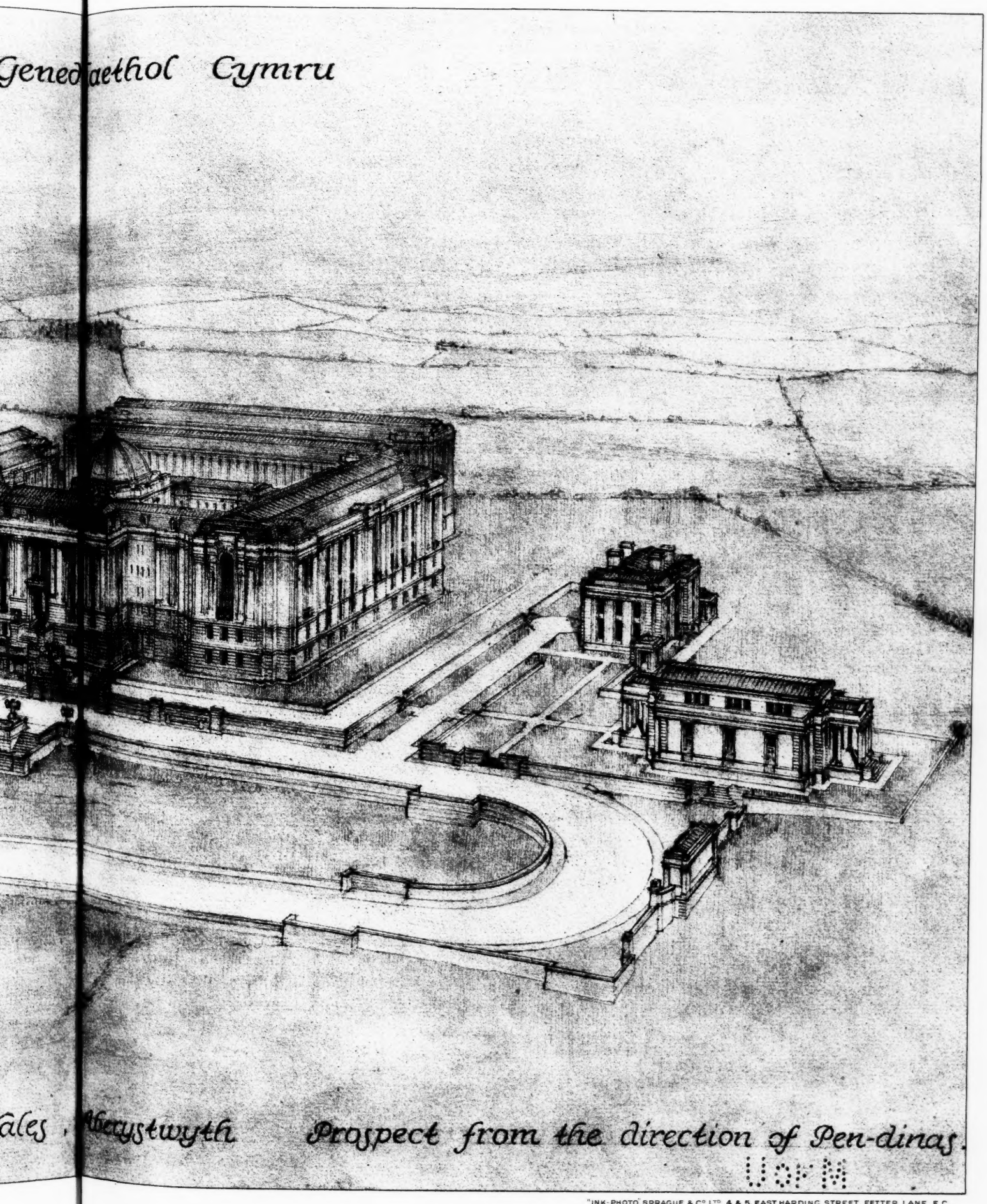

ales. Aberystwyth. Prospect from the direction of Pen-dinas.

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